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Volume XV NOVEMBER, 1915 Number 3

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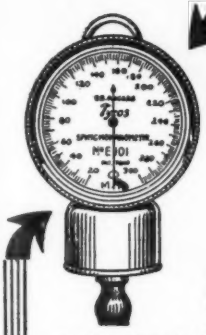

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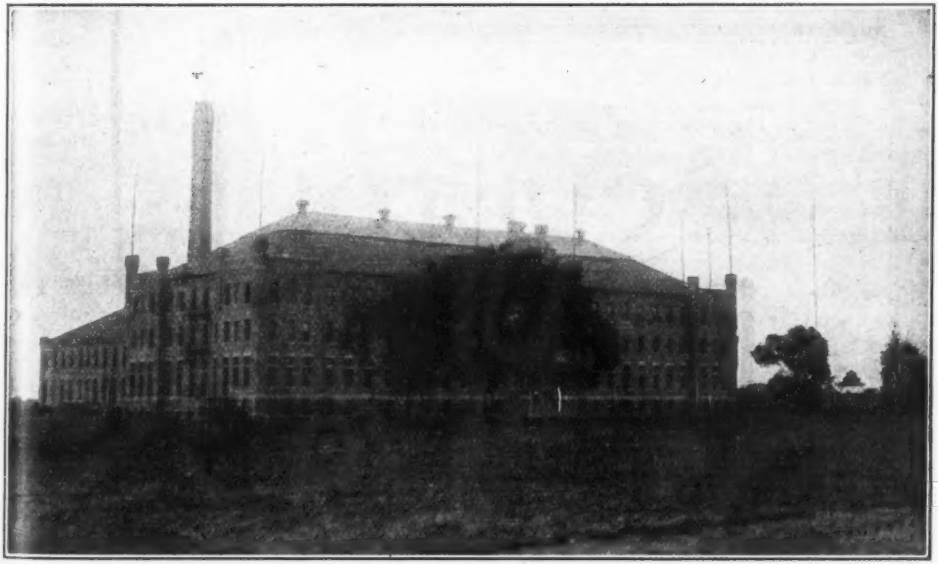

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THE JOURNAL OF THE
AMERICAN OSTEOPATHIC ASSOCIATION

VOL. XV NEW YORK, N. Y., NOVEMBER, 1915 NO. 3

ACIDOSIS

Its Etiology and Effect on Human Health.

G. V. WEBSTER, D. O.,
Carthage, N. Y.

THE maintenance of a normal environment for each of the billions of cells of the body is a matter of concern to every one who is interested in preserving the health of the body. The normal reaction of the body fluids, the lymph and blood, and protoplasm, is slightly alkaline. The acids or their antecedents absorbed from the digestive tract or formed during metabolism normally are either oxidized or neutralized, so that the blood and the fluids surrounding the cells of the body tissues are maintained in an alkaline state.

Types and Sources—The name "acidosis" was first applied by Naunyn to designate the condition found in diabetes characterized by an excess of oxybutyric acid in the blood. The term is here used to designate any acid intoxication or lessening of the normal degree of alkalinity of the blood, lymph or protoplasm. The kinds of acidosis are distinguished as "absolute" (Naunyn), in which the introduction or formation of acid is not accompanied by an increase of bases in the same ratio; and "relative" (Steinitz), in which the acids predominate merely by the withdrawal of alkalies.

In human pathology acidosis of the first type is most commonly caused by oxybutyric acid. In certain liver diseases lactic acid is also present in considerable quantities and uric, oxalic and aromatic acids or their antecedents may also contribute to its causation.

Acidosis of the second, or relative type, is caused principally by the sulphuric and phosphoric acids normally produced in the body by the cleavage and oxidation of proteids either of foods or tissues, containing sulphur and phosphorus as constituent parts.

The formation, from fatty acids and alkalies in the intestine, of soaps, which, because either of difficult solubility or of digestive disturbances, are passed off in the feces instead of being absorbed, is a prominent factor in the production of the second type, or relative acidosis, particularly in infants suffering from digestive disorders (Forbes[1]).

An alimentary form of acidosis is recognized in which the bacterial putrefaction of foods in the intestines gives rise to the formation of abnormal acids—probably beta-oxybutyric and acetylactic acids. For this reason, it is believed, intestinal stasis becomes a factor in acidosis distinct from the usually considered auto-intoxication.

Aside from the causes of acidosis mentioned above, the acidity of the blood is influenced by several physiological factors. Crile maintains that it is increased by muscular effort, emotional disturbances, surgical shock, infections, asphyxia, inhalation anesthesia, alcohol, starvation, diabetes and Bright's disease. He has been able to demonstrate in brain, liver and glandular tissue pathological changes of structure due to the influence of increased acidity due to such causes. Crile defines an acidosis as existing whenever the acidity of the urine is higher than normal. The other secretions of the body, the saliva, the gastric juice, the perspiration, the nasal secretions may also show an excess of acid. No age is immune from the effects of acid intoxication, from the acidosis of infancy to the terminal acidosis of old age; in fact, Crile contends that death from whatever apparent cause is in the last analysis due to an acidosis. Probably at least one out of every three patients to enter our offices suffers in some degree from acidosis.

The acids or their antecedents which are the cause of acidosis show a wide variety. Both organic and inorganic acids have been

Address before the Ontario Osteopathic Assn., at Toronto, October 28, 1915.

identified by various investigators. Of the mineral acids, Forbes says:

The vital reactions taking place in the body require that certain necessary conditions be maintained with unvarying constancy. None of these conditions is of wider or deeper significance to these vital processes than the state of the liquids and issues as regards acidity and alkalinity. In the body there are constantly being formed inorganic acids, both from the food and from the tissues, which must be neutralized in order that the alkalinity of the liquids and tissues may be maintained and a continuance of life rendered possible. The basic minerals in foods contribute to one side of this account, and the acid minerals to the other. An animal's capacity to neutralize them in normal ways may cause a withdrawal of basic minerals from the body and, in consequence, most serious disturbances of nutrition * * *

The mineral bases, calcium, magnesium, sodium and potassium, enter the body mostly as salts of various organic and inorganic acids; though calcium, at least in milk, egg-yolk and seeds, occurs also in organic combination with proteins. These alkali-reacting elements are used in the body mostly in inorganic combination with phosphoric, sulphuric, hydrochloric and carbonic acids, principally for structural, regulative and catalytic purposes. They leave the body as inorganic salts in combination with the above-mentioned mineral acids. Thus it is seen that these mineral elements, both acid and bases, enter the body in a great diversity of forms, both organic and inorganic, perform in the body a multiplicity of complicated functions and then leave the body in an inorganic condition. The cause of this approximate neutrality of the blood, is, according to Henderson[3], largely the result of a physico-chemical equilibrium between the carbonic acid, sodium bicarbonate, monosodium phosphate and di-sodium phosphate contained therein and maintained by the secretory capacity of the lungs and kidneys.

A very slight disturbance by acids of the reaction of the blood must result in a complete disappearance from it of carbon dioxide. Thus it becomes a matter of much importance to the body that the neutrality or slight alkalinity of the blood be abundantly safeguarded. In herbivora this is accomplished by the formation of carbonates in the body by oxidation of the abundant organic-acid-salts of sodium, potassium, calcium and magnesium, which are found in vegetable foods and under ordinary circumstances the carbonates thus formed are quite sufficient to meet the requirements. In this class of animals there is but very slight provision for any other method of neutralization of acids.

Because of the practical inability of herbivora to neutralize acids with ammonia and the limited capacity of carnivora and omnivora to do the same, there comes a time, with increased consumption or production of non-oxidizable acids, and much more quickly with herbivora than with omnivora and carnivora, when the animal is no longer able to maintain the neutrality of its blood and tissues. At this point acute symptoms of acid intoxication appear and death may follow quickly with symptoms of asphyxia.

Omnivora and carnivora consume comparatively little mineral base in combination with organic acid and also comparatively little performed carbonates. Further than this, their food, being much richer in protein than the food of the herbivora, produces correspondingly greater amounts of sulphuric and phosphoric acids by its cleavage and oxidation within the body. Hence we see that there is necessity for the provision of an extensive acid-neutralizing function in these animals. In accord with this requirement, we find that carnivora and omnivora have the capacity to neutralize a certain amount of acid in the body with ammonia. This use of ammonia for acid-neutralization does not increase in extent proportionately with increase in the consumption of protein, however; otherwise there would be no such thing as acidosis from an exclusive protein diet. * * *

The organic acids of food stuffs, such acids, for instance, as the citric, malic and tartaric acids of fruits, are mostly oxidized in the animal body into carbon-dioxide and water, in which compounds they are excreted; but there are formed within the body mineral acids which cannot be decomposed and eliminated in this way. These acids must be neutralized in order to protect the animal from a disturbance of conditions essential to the continuance of vital reactions. These acids are formed chiefly by the cleavage and oxidation of the proteids, either of the body or of the food, the sulphur and phosphorus contained therein, as constitutent parts, being oxidized to the corresponding inorganic acids. The mineral acids include sulphuric, carbonic, phosphoric and hydro-chloric (Forbes[4]).

Among the organic acids which have been identified as causes of acidosis are uric, oxalic, lactic, hippuric, butyric, diacetic, oxybutyric, beta-oxybutyric, acetylacetic, bile acids and an excess of amido acids.

The chemistry of the formation of these acids leads us into the field of organic chemistry—a field in which our knowledge is as yet incomplete. However, certain points seem to have been scientifically demonstrated by various investigators as to the process of formation of some of these acids and their identity seems to have been well established.

The source of many of these organic acids is shown by Porter[6] to be from the suboxidation of the protein molecule during

metabolism. He presents a very interesting table which is here copied. * (Foot note No. 3.)

The reason for an over production of uric acid he assigns to one of several causes which limit the normal oxidation of the protein molecule. He names as causes either the anatomical or physiological limitations of the lungs to provide sufficient oxygen or the ingestion of an excess of carbohydrates, i. e., starches and sugars which are more easily oxidized than the protein molecule so that there is not sufficient oxygen left for that purpose. A third type is described as resulting from intestinal stasis, the toxins from which interfere with the proper oxygenation of the blood. In a forth type the failure is laid to decreased hepatic function altering the ease with which the products of protein digestion are oxidized. In some cases the over-production of uric acid is shown by the deposit of crystals in the urine; in others the acid is held in solution. (See foot note No. 2.) Oxalic acid appears from Porter's chart to be one of the products of suboxidation of protein. Some investigators have considered that it might be introduced in foods of a vegetable nature which contain oxalic acid. This acid is with difficulty oxidized. Lactic acid also appears to be one of the products of suboxidation of protein. It may be formed by glycogen breaking down in the liver. Hippuric acid is another of the products of incomplete oxidation of protein. Beta-oxybutyric acid and acetylacetic acid are probably formed when intestinal fats are split into fatty acid and glycerine during bacterial putrefaction in the intestines. When these acids reach the blood and tissues they are finally broken up into acetone and carbon-dioxide.

Exaggerated excretion of amido acids is the result of anatomical lesions of liver or functional alteration of its cells *(Marcel, Labbe, and Birth)[7]. The amido acids are derived from the fatty acids. They are formed during digestion and metabolism from proteids and albuminoids. It is in the form of the amido acids that the products of digestion of nitrogenous foods are transported throughout the organism. These appear to be normal products of protein digestion, but may be in excess. Diacetic acid is formed by the union of glycerol and two acetic acid radicals and with oxybutyric acid is the cause of the acid intoxication of diabetes. Of the mineral acids carbonic acid is a normal end product of metabolism and as such is excreted by the lungs. Its retention in the tissues leads to toxic symptoms or when completed to asphyxia. The source of sulphuric acid is, according to Forbes[8], as follows:

> Sulphur enters the body in food protein in organic compounds, with oxidation the sulphur is burned to sulphuric acid and excreted in urine as inorganic sulphates.

Regarding hydrochloric acid, we find that chlorides enter the body as chlorides and

No. 2. *Porter's Test for Overproduced Uric Acid*—After boiling the upper strata of urine in a test tube add a few drops of 4% acetic acid. Let it stand for 3 or 4 hours, after which the overproduced uric acid will crystallie out just beneath the surface of urine in test tube.

TABLE I.—POSSIBLE PRODUCTS OF OXIDATION OF THE PROTEINS OR "C H N O S" COMPOUNDS.

Oxidation	Protein	Oxygen Used	Urea	Uric Acid	Creatinim	Oxalic Acid	Lactic Acid	Glucose	Hippuric Acid	Carbon Dioxide	Water	Sulphuric Acid*
Highest		154(O)=	9(CH_4N_2O)							+63(CO_2)	+37(H_2O)	+(H_2SO_4)
Super		151(O)=	7(CH_4N_2O)	+ ($C_5H_4N_4O_3$)						+60(CO_2)	+39(H_2O)	+(H_2SO_4)
Normal		139(O)=	4(CH_4N_2O)	+ ($C_5H_4N_4O_3$)	+2($C_4H_7N_3O$)					+55(CO_2)	+38(H_2O)	+(H_2SO_4)
Uric Acid	$C_{72}H_{122}$	136(O)=	2(CH_4N_2O)	+2($C_5H_4N_4O_3$)	+2($C_4H_7N_3O$)					+52(CO_2)	+40(H_2O)	+(H_2SO_4)
Oxalic Acid*	N_{16}	129(O)=	2(CH_4N_2O)	+2($C_5H_4N_4O_3$)	+2($C_4H_7N_3O$)	+7($C_2H_2O_4$)				+38(CO_2)	+33(H_2O)	+(H_2SO_4)
Lactic Acid	$O_{22}S$	94(O)=	2(CH_4N_2O)	+2($C_5H_4N_4O_3$)	+2($C_4H_7N_3O$)	+7($C_3H_6O_3$)				+31(CO_2)	+19(H_2O)	+(H_2SO_4)
Diabetes		76(O)=	2(CH_4N_2O)	+2($C_5H_4N_4O_3$)	+2($C_4H_7N_3O$)	+5($C_6H_{12}O_6$)				+22(CO_2)	+10(H_2O)	+(H_2SO_4)
Hippuric Acid		67(O)=	2(CH_4N_2O)	+2($C_5H_4N_4O_3$)	+2($C_4H_7N_3O$)	+4($C_9N_9NO_2$)				+21(CO_2)	+24(H_2O)	+(H_2SO_4)

*Appears in the urine as a sulphate.

leave as chlorides. In the body they are utilized as chlorides and normally secreted in the stomach in the form of hydrochloric acid. Phosphorus enters the body in many combinations, forms phosphoric acid and leaves in the form of phosphates.

Regarding the physiological action of the mineral acids, Forbes[9] says:

> There are in all foodstuffs and in the living tissues of animals, mineral elements in organic combination, which, upon oxidation in the body, yield inorganic acids. The animal must be protected from these acids, which would produce profound disturbance of function if allowed to circulate throughout the body. To this end they are neutralized with substances possessing a basic reaction and then in their neutral condition, are either excreted or used as nutrients.

With reference to the causes of acidosis from the mineral acids he continues:

> When oxidizing organic compounds, either nitrogenous or acid, containing sulphur or phosphorus, are disintegrated, or when chlorides are decomposed in the animal body, there are formed from the sulphur, phosphorus, and chlorine, the corresponding non-oxidizable inorganic acids. Since these acids cannot be broken up by oxidation and excreted by the lungs, they possess a different significance from oxidizable organic acids. An excess of these or other mineral acids, or of non-oxidizable organic acids, in the body, gives rise to the pathological condition known as acid intoxication or acidosis.

The influence of the acid intoxications may be considered from more than one view point; the influence upon certain tissues of the body, the influence upon the functions of the blood, the influence upon certain glands and organs and the influence upon the organism as a whole.

Effect of Acidity—The effect of diminished alkalinity of the blood and lymph upon nervous tissue has not been fully investigated, but the evidence at hand tends to show that its influence in the central nervous system is an inhibition of the action in the cerebral cortex and a stimulation of the medulla (Dutton[9]). From the convulsive seizures of the acid intoxication of uremia it would seem that the influence was to lessen the stability or insulation of the peripheral nerves. Alkalinity of the lymph provides a means for perfect nerve insulation (Kanstoroom[10]).

> Perfect nerve insulation is the keystone to normal animal cell action which is attained only through perfect alkalinity of the animal cell media. The function of perfect animal cell alkalinity is to bring about perfect nerve insulation.

Crile has shown the degenerative influence upon the nerve centers due to the acidosis of surgical shock. Clinical observation has demonstrated many times that the peripheral nerves are rendered more sensitive to pain when the acidity is high. An acid crisis in which excruciating pain experienced without evidence of pathological basis except acidity has been described by Dutton[11].

It seems probable that acidosis may be a factor in the irritation to the nervous system evidenced by spasmodic discharge of nervous energy. The character of the urine in chorea bears evidence that acidosis may be a factor in this affection (DeMarchis[12]). I have observed improvement in cases of chorea on a diet rich in mineral bases.

The influence of acidosis upon the bones is shown by the experiments at the Ohio Agricultural Experiment Station by the production of rickets and osteomalacia in animals by feeding a ration in which there was excess of mineral acid over mineral base in the food. The conservative forces of life, in such instance, sacrifice the mineral base of the bones to neutralize the excess of mineral acids present in the system.

The influence of acidosis upon ligamentous structures appears to be first an increase in ligamentous tension which is followed by either one of two conditions, the different courses being probably due to the character of the acidosis. Either there is an increase of tissue deposit, the result of connective tissue proliferation in accordance with a law defined by Metchnicoff[13] by which the ascendancy of nutritional influences passes from the higher cells to those of a lower order, resulting in permanent thickening of the ligament or through what might be termed a reversal of this course there is a gradual loss of tone in the ligament. This becomes of intense practical value to us in helping solve the problem of both tightened ligaments (Sartwell[14]) and relaxed ligaments. In this connection a diet rich in mineral bases I have found of value

in helping to re-establish normal range of motion in joints showing restricted movements, the result of connective tissue thickening, and in conditions where there is a relaxed condition of the ligaments such as found in flat-foot and sacro-illiac relaxation, or of the viscera as in prolapsus of the uterus, gastroptosis, enteroptosis, and movable kidney.

The toxic influence upon the muscles may be either directly through the lymph or through the nerves supplying them. The direct results observable in muscles are first a tonic condition such as found along the spine in the acute acid intoxication that accompanies the acute infections. The intoxication long continued is followed by a relaxed flabby muscular tone, the result of the operation of the same law given by Metchnicoff above mentioned. From personal observations it would seem that the unstriped muscle is more susceptible to the influence of acid intoxication than the striped and also that it passes through the tonic to the atonic state more quickly. The observations upon which this conclusion is based have shown the abdominal viscera having reached the atonic state, while the general musculature was still in the tonic state.

The influence of acidosis upon the ductless glands is undoubtedly most pronounced. One reference dealing with the observations of the influence of acids and alkalies on the colloids of the body which are found in all the glands except the mucous glands, I will quote from Dunn[15], who finds the following laws govern the swelling and unswelling of protein colloids:

Colloids swell in dilute acids.

Colloids which have taken up water in the presence of dilute acids can be made to give up the absorbed water by neutralizing the acid with alkali.

The foregoing reactions are usually reversible, *i. e.*, colloids can be made to swell and unswell almost indefinitely. This quality of elasticity gradually disappears; hence colloids may be said to age.

These facts make it evident that the life history of a colloid is to an extent a function of its water content. Every organ of the body has, under normal circumstances, a normal water content; in other words, it is in a normal state of swelling. Departure from this normal water content means disease or death. The constancy of the water content of cells depends on the presence of certain electrolytes and non-electrolytes and on the maintenance of a neutral reaction. The failure to maintain neutrality is followed by swelling and impaired function accompanies this (Dunn[17]).

This investigation by Dunn forms a connecting link showing the possible relationship between acidosis and the swelling of certain tissues as observed in disease, such as adenoids, tonsillitis, goitre, enlargement of the spleen or kidney, hypertrophy of the liver, prostatic enlargement, etc.

In the mucous membrane we find the effects of acidosis shown by a lack of normal tone of the membrane which is really a sickening and weakening of the individual cells due to the reduced alkalinity of their media so that their normal tension is relaxed, permitting abnormal secretions more or less irritating or acid in character to leave the lymph and blood streams. Examples of this are observed in catarrhal conditions—the common cold, hayfever, bronchitis, asthma, gastritis, enteritis, etc.

The skin is sometimes the organ through which the acid intoxication is manifest in the form of herpes, ecema, urticaria, falling hair, etc. Numerous cases of eczema I have seen clear up when the excess of carbohydrate which was evidently producing the acidosis was withdrawn from the diet.

It is undoubtedly true that a state of acid intoxication presents the favorable field for the development of the modified streptococcus which has been identified with the joint lesions in arthritis. Acidosis is a large factor in immunity. It is probably a forerunner of many of the acute infectious diseases if not the actual predisposing cause of the same. All are familiar with the highly acid urine of the acute infections. The reduced alkalinity of the blood and lymph in these cases probably impairs the operation of the body's defensive mechanism, thus forming the favorable field for the development of the infecting agent.

The effect of acid intoxication on the circulatory system is seen in its influence upon the musculature of the arteries. It influences the unstriped muscle fiber here as

elsewhere, first by increased tone, accompanied by an increased blood pressure, due to the constriction of the arterioles by the muscular tone and from colloid swelling, such a condition continuing to end either in sclerosis of the arterial wall or, under other conditions, the factors of which are unknown, relaxing to produce the low blood pressure as observed in neurasthenia and other chronic intoxications. The different termination cannot be accounted for except possibly by the character of the acid intoxication, or its reaction on the internal secretions or nerve centers.

One of the influences of acidosis upon the blood itself is in the reduction of its ability to carry carbon dioxide away from the tissues, resulting in deficient oxygenation characterized by more or less air hunger or a cyanosed condition which varies from a mild to extreme form (Sellards[17]).

The influence upon the organism as a whole of reduced alkalinity is shown in various disorders of metabolism, in changes in the nutritional balance, in evidences of age of the organs, in a slowing of the vital processes, as special diseases it is manifest, being localized by the osteopathic lesion to certain organs or tissues or by the selective character of the acid or acids contributing to the condition.

In the localization of the evidences of acidosis by the osteopathic lesion, we find that the organ exhibiting impaired function is deprived of its normal nerve or blood supply by the lesion, it then becomes the weak member through which an acid intoxication is first evidenced by impaired function, the lesion being the predisposing cause and the acid intoxication the exciting cause.

During pregnancy, we have evidences that the expectant mother suffers more or less from acid intoxication. The vomiting of pregnancy (Cornwall[18]) being undoubtedly of such origin. The old saying of a "tooth for a child" indicates the draft which nature makes upon the mother for mineral bases required in the formation of the foetus, leaving the mother depleted of her own supply of mineral bases with resultant acidosis. As I studied this subject of acidosis I wondered if possibly in this could not be found a solution of that bane of childbirth—the laceration. In other conditions of acidosis the orifices of the body often exhibit friability or what might be termed "brittleness" of the tissues. Their elasticity is wanting. We find such conditions in cracked lips and anal fissure, both of which I am satisfied are associated with an acid intoxication. With an acid intoxication either of the mineral or organic acids existing at the time of delivery, is it not possible for the "brittleness" of the cervix or perineum, due to such an acid intoxication, so to limit the elasticity of the cervical and perineal tissues that they are lacerated sometimes in spite of the best osteopathic precautions? This matter is of the greatest interest to us as physicians, and to the future mothers under our care.

Elimination and Neutralization—We have studied the source of the acids and some of their influences upon the various tissues and organs of the body. In considering their elimination or neutralization, we find that many of the acids are not readily oxidizable and that provision is not made in man, as it is in some of the animals, for their elimination without oxidation.

As regards the mineral acids, whether phosphorus is excreted in either the urine or feces depends largely upon the character of the diet. The greater the amount of vegetables eaten containing calcium and magnesium the more phosphorus will leave the body by way of the feces, relieving the organism of the burden of neutralizing the phosphoric acid or its compounds, and eliminating the same by way of the kidney (Forbes[19]). The liver and the kidneys are the two organs most concerned in the neutralization and elimination of the non-oxidizable acids (Crile[20]). Muscular exertion increases the amount of acid excreted in the urine (Kenaway[21]).

Dr. Deason has demonstrated that the urine can be increased both in volume and density by osteopathic manipulation (Deason[22]). Osteopathic treatment, then, is one way in which we can assist in the elimination of acids or their salts.

In carnivorous animals, also in man, the tissues oppose the acid by supplying ammonia and alkaline carbonates to neutralize it. The mineral acids are neutralized as follows:

(1) by carbonates of the food, water or tissues;

(2) by alkalies liberated by the oxidation of organic-acid salts;

(3) by ammonia withdrawn from the constructive formation of urea;

(4) by ammonia from the tissues;

(5) by ammonia split off from proteids, especially for acid-neutralization (Forbes[23]).

The acids of fruits are oxidized in the animal body to carbon dioxide and water, and in this form are eliminated by the lungs. The remaining ash is, in most instances, alkaline, and can be utilized to neutralize other acids.

The correction of uric acid overproduction is accomplished by providing for the normal oxidation of the protein molecule in the body by increased respiratory effort, the limitation of other foods more easily oxidized than protein, the limitation of the amount of protein consumed, the prevention of intestinal stasis, the promotion of the normal functioning of the liver and kidneys. The same is true of the other suboxidation acids, such as oxalic, lactic and hippuric.

Symptoms—The symptoms of acidosis may be divided into those characteristic of the acute or chronic acidosis. The acute symptoms are increased respiration, air hunger (Crile); psychic vomiting, sudden spasmodic pain in the urinary organs without demonstrable physical basis other than excess of acid, faintness, nausea, high specific gravity of urine or high total urinary acidity (see footnote No. 1), and the recognition of the organic acids by urinalysis. Thirst is characteristic, distate for food, depression, headache, drowsiness or even coma, as in diabetes or Bright's disease. There is an increase of ammonia salts in the urine. There is some cyanosis, due to the retention of the carbon dioxide in the tissues.

In mineral acid intoxications the urine may exhibit an excess of the salts of those acids as phosphates, chlorides and acid sulphates. Forbes[24] says that an acidosis of mineral acids may be inferred from the presence in the urine of an increased proportion of nitrogen in the condition of ammonium salts, since the salts are utilized by the usual neutral non-oxidizable acids.

The symptoms of chronic acid intoxication are of two types, either tense ligaments along the spine, tense muscles, urine of high specific gravity, capillary engorgement, elevated blood pressure, more or less dizziness; or the other type representing an advanced state of chronic acid intoxication with relaxed tissues, langor, splanchnoptosis, frequent headaches, occasional nausea, subject to colds, low blood pressure, sensitive to pain, anaemic, general evidences of decreased oxygenation. There are symptoms of gastro-intestinal catarrh, depraved appetite, muscular weakness, gait sometimes stiff and laborious, sometimes symptoms of arthritis, crackling of the joints, roughening of the skin, brittle and falling hair, sprains are frequent.

The diagnosis of uric and associated acids may be determined by a slow capillary relux, elevated blood pressure, impairment of joint functions, and by urinalysis (Sartwell[25]). Sleep is not refreshing, particularly in cases of acidosis due to suboxidation, the respiratory functions being less active during sleep.

Diseases Associated with Acidosis—The diseases in which acidosis may be recognized as a factor include rickets, dental caries, adenoids, tonsillitis, catarrhal conditions of the respiratory and gastro-intestinal tract, enteroptosis, many diseases of the liver and kidneys, certain forms of anemia, arterio-sclerosis, asthma, hay-fever, most of the acute infectious diseases, purpura, scurvy, lithemia, many of the functional and organic nerve diseases, eczema, herpes, urticaria, epilepsy, varicosed veins, conditions other than nervous diseases characterized by increased or decreased tissue tone, symptoms which are localized by the osteopathic lesion, and many general conditions. There is some evidence that an acid intoxi-

No. 1. *Test for the Degree of Acidity*—Take 10 c.c. of urine. Add 2 drops of phenolphthalein. Add decinormal solution of sodium hydrogen drop by drop until rose pink appears stable in solution. Shake after each drop is added.

In making the test use a tube graded to 1/10 c.c. Each 1/10 of the decinormal solution of sodium hydrogen added equals 1 degree of acidity. 30-40 is considered normal.

cation is a factor in even tuberculosis and cancer.

If perfect alkalinity is essential for perfect nerve insulation, a reduction of the same might be a controlling factor in insanity, which in some forms seems to present manifestations of imperfect insulation of nervous impulses in the higher centers.

Treatment—The treatment of acidosis should embrace hygenic, dietetic, and osteopathic measures. The plan of treatment must be varied in accordance with the character of the acids, whether mineral or organic, as obviously the same therapeutic measures would not apply the one to the other. Evidences as to whether the patient suffers from mineral or organic acid intoxication may be gathered from the history, from the physical examination and from urinalysis, the technique of which it is unnecessary to present here. The presence of uric, oxalic, hippuric, or diacetic acid in the urine indicates the cause to be in suboxidation during metabolism. The presence of an excess of ammonia or mineral acid salts in the urine indicates an active mineral acid intoxication.

The general treatment for the acidosis of suboxidation includes exercise, respiratory gymnastics, out-of-door life, the relief of intestinal stasis, by enema, diet and osteopathic treatment, sweats or Turkish baths and the drinking of much distilled water.

The dietic treatment includes besides short fasts, a reduction of the carbohydrates, a reduction of the protein to as low a point as bodily requirements will permit and the use of foods which will promote peristalsis. The fats should be very limited. No tea, coffee, cocoa or chocolate should be allowed because they appear to influence the overproduction of uric acid. Some consider that foods rich in purin bodies contribute to the overproduction of uric acid, but Porter maintains that it is simply a matter of the suboxidation of protein. In oxyalic acid intoxication vegetables rich in oxalic acid should be excluded. These include rhubarb, pepper, spinach, tomatoes, strawberries, beets, figs, plums, potatoes.

The osteopathic treatment should be directed to secure normal functional activity of the bowel, liver, kidneys and lungs, also specific treatment to the lesions which localize the symptoms.

In the acidosis of mineral acids, the hygiene is of secondary importance to the diet, but should be given due consideration. The osteopathic treatment should be generally tonic with specific attention to the localizing lesions. The diet should be arranged so as to provide sufficient protein for the actual needs of the body and an excess of mineral bases in the food.

Vegetables and fruits are, because of their great excess of basic over acid mineral elements, much better suited to supplement meat than the cereal preparations, none of which have any considerable preponderance of mineral base, while in most, the balance is in favor of mineral acid.

White bread has an excess of acid minerals and so have corn and most of our multitudinous prepared breakfast foods.

This over-consumption of protein, especially in meat, coupled with our increasing use of cereal preparations and of sugar, which supplies carbohydrates without basic mineral matter, requires of us that we give attention to those foods which are by nature fitted to supplement this one-sided ration. Such foods are vegetables, especially, and also fruits (Forbes[26]).

A diet poor in basic mineral ash is an acid-forming diet. A diet rich in proteins, fats and carbohydrates is an acid-forming diet (Carrington[27]).

Skim milk, buttermilk, barley gruel, orange juice and egg albumen are of value in acute acid intoxications, as all tend to overcome acidosis by low fat content and the preponderance of basic over mineral acid elements.

The capacity of a body to care for an alkaline excess seems to be entirely adequate and no concern from this source need be felt. Our dietetic oversight of these cases is of great importance.

This table of food analysis, showing excess of total bases or acids from data collected at the Ohio Agricultural Experiment Station[28], I have followed, in prescribing a diet in cases of mineral acidosis, with good success:

Foods having excess of mineral base and

useful in mineral acidosis are: Cows' milk, white of egg, cabbage heart, asparagus, spinach, rhubarb, oranges, apples, plums, raisins, figs, apricots, whole wheat, wheat bran, beans and soy beans.

Foods having excess of acid ash to be avoided in mineral acidosis: Beef, pork, chicken, eggs, wheat grain, white bread, gluten flour, hulled rice, oatmeal, corn and hominy.

While this study of the acid intoxications is rather superficial, in the search for and the attempt to correlate the facts presented, I have found much of practical value and have reached the following conclusions:

1. That acid intoxications are fundamental in a large number of the diseases of mankind;

2. That a determination of the probable character of the acidosis whether caused by organic or mineral acids is possible;

3. That with a proper recognition of the underlying acidosis we are better able to cope with the manifestations of the same;

4. That hygienic, dietetic and osteopathic measures afford the safest and most rational means of combating the acid intoxications and their sequelæ.

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OSTEOPATHIC GYMNASTICS IN ANTERIOR POLIOMYELITIS AND OTHER PARALYSES

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PARALYSES of central origin can be but little benefited by osteopathic gymnastics, while those of superficial or spinal origin may be greatly aided. If there is any voluntary motion possible in the fingers or toes, the nerve cells controlling the musculature to these parts are not entirely destroyed and new nerve paths may be developed or old ones restored. To accomplish either, however, it requires time and perseverance.

Briefly, the line of procedure is through osteopathic manipulation followed by assistive and, later, resistive movements. Last of all, single movements are prescribed. Assistive movements means movements willed by the patient, but executed by the operator. Resistive movements are performed by the patient and resisted, according to the patient's needs, by the operator. Single movements are exercises performed by the patient without outside asistance or resistance.

Though a patient cannot move a part in a given direction, through partial or complete atrophy, still the connection between the brain and motor nerves may be improved by properly applied assistive movements. Suppose only the flexors of the arm are paralyzed, the arm will remain straight, owing to the inability of the flexors to counteract the normal tonic contraction of the extensors. In such a case, if the patient is told to flex the arm, and he makes a voluntary effort to do so, the fact that he will it makes it an active movement, though the arm remains unflexed. Now, with this process going on in the patient's brain, if the operator flexes the arm for him, through the latter's assistance, there is produced an active movement. The patient's part is to strive to the utmost to perform the movement. There is a stimulus sent forth from the brain and the response is in the arm and thus there may gradually grow the normal connection between the center and periphery.

This rule holds good with any part of the body which should normally be under voluntary control.

Infantile paralysis can be greatly aided during the reconstructive period. Gentle kneading and vibration leading up to assistive and gentle resistive movements, in addition to the necessary osteopathic procedures, will be found most efficacious. Find out what movements are lacking or difficult and gradually develop the muscles so as to restore control of these movements. It may be possible to develop new cell areas, besides hastening the multiplication of those left in tact, and thus restore proper nerve control of the atrophied parts.

In the treatment it is best to work from the central to the peripheral end of the limb or part. For instance, suppose the legs are paralyzed, begin at the hip joint with assistive exercises, then resistive, and as soon as it is controlled to any degree, begin with the knee and so on. The details of this feature of the treatment are given with the illustration.

Whether we should expect complete restoration of motion after an attack of infantile paralysis is a question whose answer largely depends upon the extent of the tissue destruction. Light cases will be fully repaired, but extreme cases will never fully recover even after years of treatment, though they may show marked improvement for a time. Whatever the degree of paralysis, whether the prognosis is good or bad, and by whatever method the patient is treated, proper gymnastics are always indicated as part of the treatment, for, even if the patient does not improve, such procedures will prevent further degeneration.

Before describing a hypothetical case and its treatment, a few words about the methods of treatment and prognosis might not be amiss. The use of a properly adjusted brace is helpful. It is claimed by orthopedists that many cases have been restored to normal by means of braces alone. This hardly seems possible where there was extensive destruction of the cells in the anterior horn. But, in mild cases, the brace might suffice. The use of the brace with osteopathy and exercise is the ideal method. The proper brace is simply to serve as a temporary prop to preserve whatever gain has been made.

There are some braces constructed with elastic attachments that seem to bring quick results; but, as a matter of fact, they only aggravate the unbalanced muscular condition. As an instance, a child whose extensor muscles of the legs, from the glutei down are the only ones affected, is sometimes fitted with a brace that seems to bring immediate results. Such a brace is made with jointed steel to allow flexion of the hip and knee joints, and steel bands at the waist, back and front of the thighs and legs, furnish anchorage for elastic strips or powerful springs to serve in place of extensor muscles, thus giving antagonism to the flexors. These elastic strips are attached over the region of the glutei from a steel band that reaches around the waist to one fastened to the thigh steel strips, just below the buttocks. This elastic tissue takes the place of the glutei and extends the hip joint when the flexors of the hip (the psoas-magnus and iliacus) are relaxed. When these muscles contract hard enough to overcome the pull of the elastic tissues they flex the hip. Thus, by contracting the flexors of the hips, the elastic pull is overcome and hip flexion is produced. When these muscles relax, voluntarily or otherwise, the extension results. The same principle applies at the thigh and leg. Elastic strips are attached to do the work of the depleted extensors and antagonize the flexors.

This principle is wrong because it prevents the possibility of restoring normal muscular control. The elastic bands, by antagonizing the flexors, really exercise and strengthen them. We, therefore, have a condition in which the weak muscles are kept weak, or made weaker, because they are relieved of all work, and the strong muscles are made stronger by virtue of the fact that they are being constantly opposed and thus exercised.

In cases where one set of muscles is intact and the other only partly paralyzed, elastic strips are sometimes used to assist

the weaker set. But, even here, the tendency is to relieve the work of the weaker and antagonize and thus strengthen the stronger muscles. This process, though it enables the appliance maker to sell his goods, and though it may seem like an achievement for the doctor on the case, yet, to say the least, it delays progress for the patient.

Elastic strips have no place in proper treatment of infantile paralysis; that is, in so far as they are used to antagonize intact or nearly intact muscles. The proper method of treatment by gymnastics is to apply procedures that tend to temporarily weaken or relax the stronger and gradually strengthen the weakened muscles, and thus bring about a state of equilibrium between the antagonists. When equilibrium exists, exercises to strengthen all muscles are in order.

The only brace that can really work in conjunction with osteopathy and exercise is the regulation jointed brace with clasps to lock the joints when necessary. In this brace, if the patient is weak along the spine, a corset brace is added to the leg brace. If the patient is too weak to walk, owing to paralysis of the leg and even waist muscles, for locomotion all the joints are locked, crutches are used and both legs swung between the crutches. To begin developing control, the brace joint at the hip is unlocked on one side and the patient makes an effort at each step to control this joint. At short intervals the movable joint is locked and the other one unlocked and thus each one is exercised alternately. In time, when the thigh muscles have regained strength the knee joints may be alternately unlocked. Later one hip and the opposite knee, or both hips and one knee are unlocked, according to the patient's ability.

Besides the brace described above, which usually proves sufficient to reinforce the ankle, it is sometimes found necessary to utilize special shoes or ankle braces and artificial arches. These points and others like them are details that the doctor in charge can take care of. It will be found best, however, not to resort to any more artificial supports than is absolutely necessary. Properly applied exercises will develop the weak parts, if there is any possibility of development left, and even though the process is slow in point of time, it is the surest and swiftest for permanent results.

Plaster of Paris casts and jackets and surgical grafting of muscles are methods that are no longer, or at most but little, used. There is really no place for fixed casts in treating infantile paralysis. Whatever good these can do in correcting deformities may be done far better by rest and exercise. A permanent cast always isolates a part and isolation means weakening of muscles, and the muscles in this type of case are so weak that little isolation is necessary. Muscle grafting is also an ill-advised procedure. The process is to cut strands of unaffected or strong muscles and graft their loose ends into the depleted tissue. It is easily seen that to graft a strand of extensor fibre into a flexor muscle would only lock the muscular action if the operation were successful. If unsuccessful as this process usually is, the patient is subjected to a great deal of pain as the chief result of the experiment. All muscle-grafting operations are but experiments.

The object in the mind of the surgeon who performs muscle grafting is to stimulate a new growth of muscle cells in the depleted tissue. The aim is a good one and the work is usually done neatly, but the methods and results are wrong. If a surgeon understood the mechanics of exercise he would not undertake such a job.

In the first place, the destruction of muscular tissue is not the cause, but the result of nerve-cell destruction in the cord. Therefore, even though muscle grafting were a success, still, without proper nerve control there could be no muscular control. If the grafting of a strand of extensor muscle fibre into a flexor muscle does stimulate new growth here, still, the new flexor muscle fibres are under extensor nerve control and the best that could possibly result of such an operation would be a locking up of the joint under control of the old and new fibres. In the case instanced, stimulation

over the extensor nerve would produce contraction of the muscular fibres under its control and thus the extensor and flexor would contract at the same time. A few so-called successful cases of muscle-grafting that have come to me for treatment had immovable ankle joints as a result of the operation. Such cases cannot be benefited. If it were possible to perform a second operation to undo the mischief of the first, then, the usual process of treatment outlined below might help.

As explained above, the aim of the treatment for infantile paralysis is to restore, if possible, the motor cells in the spinal cord. Evolution teaches that our brain and nervous system are the result of necessity. The repeated experiences of lower orders of life gradually gave rise to a central controlling station for the surface activities of the organisms. As we study the different forms of life we find that there developed a more and more complex nervous mechanism. In the higher forms all muscular and organic functioning is under control of distinct nerve cells. The more complex the life of the organism the greater the number of cells in each group to control special functions. Thus, demand by a functioning part means increase of nerve cells to control this part. So that the law of structure governing function is no truer than that of function controlling structure.

Using a part, within the limits of exhaustion, will improve it. To exercise the muscles of your arm means better muscles, and to increase the complexity of the arm exercises means a gradual increase of the nerve cells controlling it. Therefore, following this cue, to begin with assistive, then resistive, exercises and later apply exercises of control, will restore a degenerated part if there are nerve cells left to appeal to. The test for this is whether or not a patient is capable of moving or producing any perceptible contraction of the muscles in question. If he can produce motion in the toes or ankles, or in the fingers and wrists, it is possible, in time (and time may mean months or years) to restore sufficient control to answer the patient's needs, and by his own persistent self-effort the patient may in time remove all traces of the affliction.

Before giving the treatment of a hypothetical case there remains another observation worth noting. There is prevalent a theory that infantile paralysis is due to bacterial infection, and some think they have discovered, while others are still seeking, a serum to cure the disease, or at least to prevent the paralysis that usually follows the acute stage. It is to be hoped that some such discovery will be made and may the day soon arrive. But in the cases coming under my care, diet seems to have played an important part. Without a single exception, every case that I have treated, or made inquiries about, the patient was partial to and lived almost entirely upon starches, fats, sugars and proteins. Vegetables, with the exception of the potato, which is also a starch, and with one or two exceptions, fruits are not relished by this class of patients. It requires coaxing to get these patients to eat vegetables and fruit. In the cases treated, progress has been steadiest and most rapid in those who reduced consumption of meats and starches to a minimum and adopted a diet in which vegetables and fruit predominated. Therefore, to the writer's mind, diet is of great importance along with other natural procedures.

Given a typical case which shows depletion and almost complete paralysis of the arms and legs, and perhaps a slight weakness of the spinal muscles, proceed with the treatment somewhat as follows:

1 Give whatever osteopathic procedures the condition requires.

2. Give thorough kneading of the spine, arms and legs and follow by vibration along the large nerve trunks of the arms and legs.

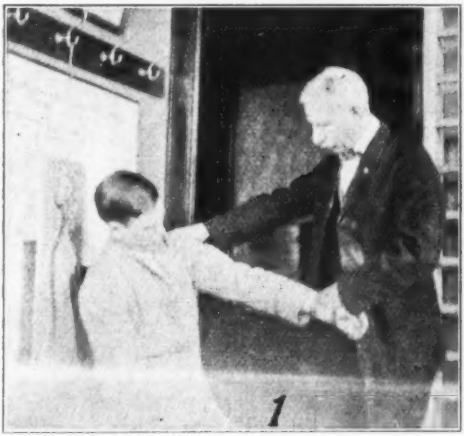
3. Give assistive, later resistive, and finally single or hygienic exercises. It is well to instruct the mother or nurse in giving the exercises, for these should be given every day once or twice, in light doses, and the home work, to supplement the doctor's treatment, will hasten restoration.

In the case given above the exercises are applied in about the following order. Re-

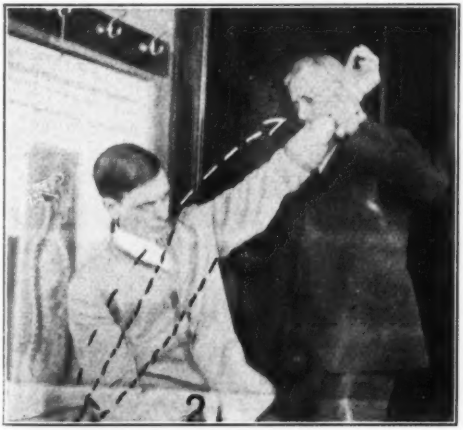
member that weeks and even months may elapse before the patient has gained sufficiently to progress from the first to the second joint of the affected limb. The first program applies to the arms, the second to the legs. But the first movements of each program are to be used in the same treatment. It is for convenience of description that they are divided.

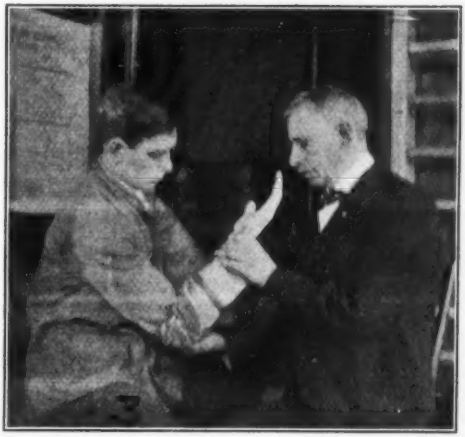
Typical Program for Arms

Exercise I.—(The patient on his back, reclining or sitting. Practice first with one arm, then the other.)



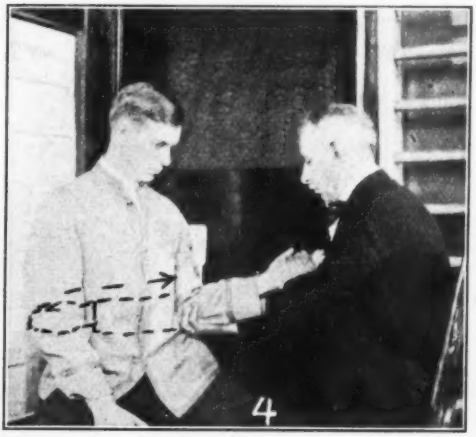
(1) Have the patient try to raise the arm forward from the shoulder. (Illus. 1.) If he is unable, raise it for him while he is making the mental effort. At first assist, later resist as far as he can go and assist further to the completion of the movement.





(2) The patient tries to raise the arm sideways from the shoulder. If he is unable, raise it for him while he is making the mental effort. Begin resisting his efforts and assisting further as soon as conditions demand it.

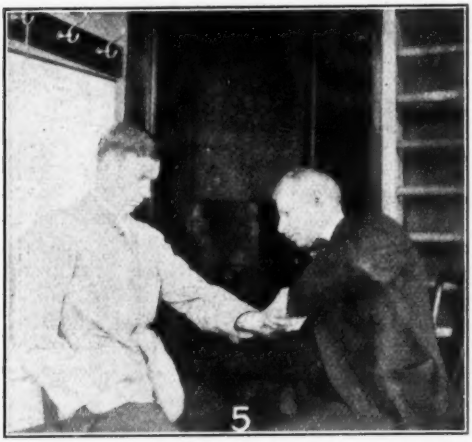
(3) The patient's arm rests diagonally across his body. Instruct him to carry it up and out as far and as high as possible. (Illus. 2.) At first assist, and as soon as the patient has gained sufficient strength and control, offer slight resistance according to his strength and assist to completion of the movement.



Exercise II.—(The patient lying on his back, reclining or sitting.)

(1) The patient is told to flex and extend the elbow. (Illus. 3.) Assist until he has acquired some control, then resist slightly as far as he can go and assist further.

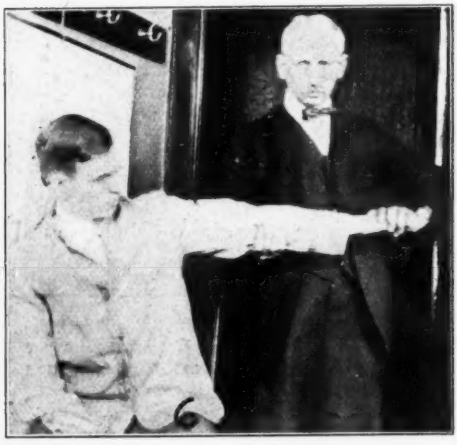
(2) The patient's arm is flexed at the elbow and the forearm held across the body. He is told to keep the elbow flexed and carry the fore-



arm forward and outward from the body. (Illus. 4.) As soon as he has acquired power resist according to his strength and assist as the case requires, while the patient is making the mental effort.

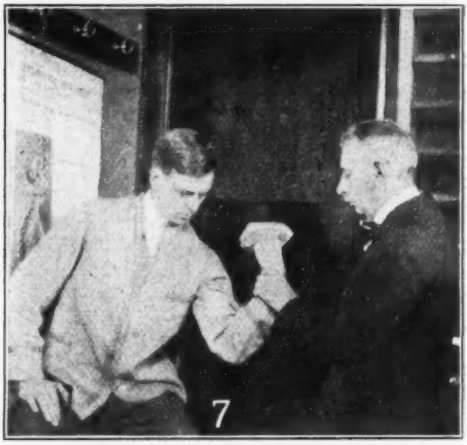
Exercise III.—(The patient reclining or sitting.)

(1) Clasp his hand and tell him to turn his palm down, then up and out. (Illus. 5.) At first assist and later resist, according to his strength.



Pronation is usually acquired before supination. Therefore, for a time, resistance is greater against the former, but it should not so far exceed resistance to supination as to create an unbalanced condition. When any region seems to progress unevenly, that is, when one set of muscles is restored more rapidly than its antagonist, it is well to guard against developing a deformity. In such a case as this, pay more attention to the naturally weaker movement. This would be done, in this instance, by resisting supination two or three times to pronation once.

(2) The patient's arm is held out straight



sideways from the shoulder. If he cannot hold it there himself, the operator supports it at the elbow with one hand while he clasps the patient's hand with the other. (Illus. 6.) The patient pronates and supinates the hand against the operator's resistance. In this movement, while the exercise is similar to the last one above, the effect is made more far-reaching by bringing the shoulder muscles into the pronation and supination.

Exercise IV.—(Patient reclining or sitting.)

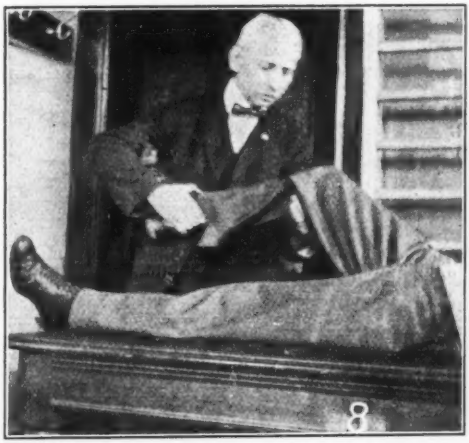
(1) The operator holds the patient's wrist above the joint with one hand and with the other he takes hold below the wrist. The patient is told to flex and extend the wrist forward and backward. (Illus. 7.) At first assist and later resist according to the patient's strength.

(2) The operator, holding the patient's wrist as for the last exercise, orders the latter to flex the wrist from side to side. The operator assists and later resists the movement.

(3) The thumbs and fingers are exercised individually or collectively in the same way as other movable parts. At first assist and later resist according to the patient's strength.

Typical Program for the Legs.

Exercise I.—(The patient lying on his back.) (1) He is told to flex the hip joint. (Illus.



8.) At first assist and, as soon as he has acquired ability, resist according to his strength.

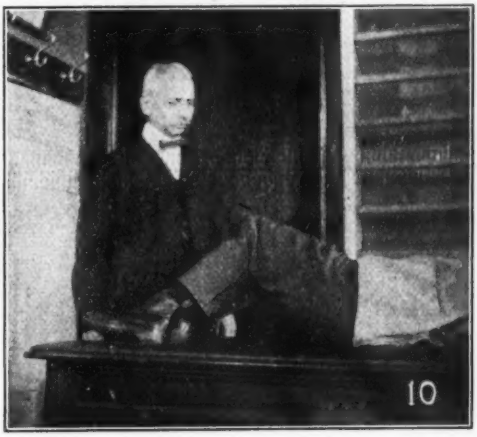
(2) As soon as possible, the patient is told to flex both hip joints at once. (Illus. 9.) At first assist and later resist according to his strength.

Exercise II.—(The patient lying on his back.)

(1) The patient's knees are flexed up, heels close to his buttocks. The operator usually has to flex the patient's knees and keep them there during the exercise. The patient drops the knees to one side and, by twisting the upper body, lifts

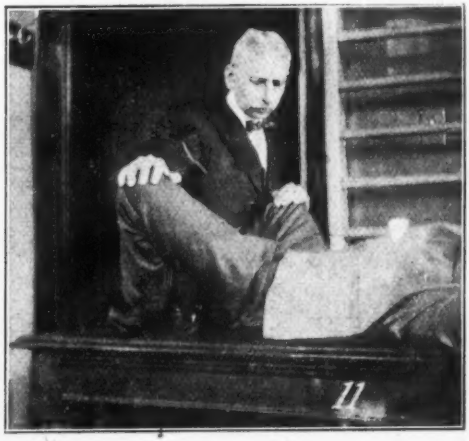
them up and drops them to the other side. (Illus. 10.) The operator has to assist at first and, later, he offers resistance. In this exercise it usually occurs that the adductors remain weak longer than the abductors.

(2) The patient's knees flexed as for the last exercise. He spreads them apart and lifts them together again. (Illus. 11.) At first the operator has to assist. Later, according to the patient's strength, he offers resistance.



Exercise III.—(The patient lying face down.)

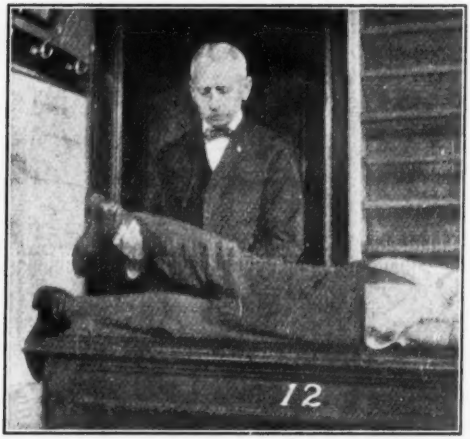
(1) He is told to raise one leg at a time, keeping the knee straight. (Illus. 12.) At first he needs assistance, and the muscles are so depleted



that no warning to keep the knee straight is necessary. When he has acquired strength no assistance is necessary, and he may even stand a little resistance.

(2) The patient is told to flex one knee up and extend it. It takes a long time to restore

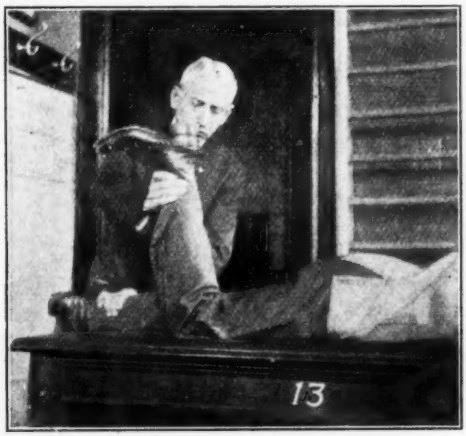
control of the knee, but, by assistive movement in each direction, sufficient power is at length acquired to perform a variation of this movement as below.



(3) The patient is told to flex the left knee. As he extends it, he flexes the right knee, and so on. (Illus. 13.) At first, assistance is given and later, resistance is applied according to the patient's strength.

Exercise IV.—(The patient lying on his back.)

(1) The operator takes hold of his ankles and commands him to spread the legs apart and draw



them together again. (Illus. 14.) This movement is done with assistance or against resistance as the case demands.

(2) The operator takes hold of the patient's toes. The latter is told to rotate the toes outward and inward without in the least flexing the knees. (Illus. 15.) This movement brings into play the external and internal rotators of the femur as well as the anterior tibial muscles. The anterior tibial muscles, which are the flexors and

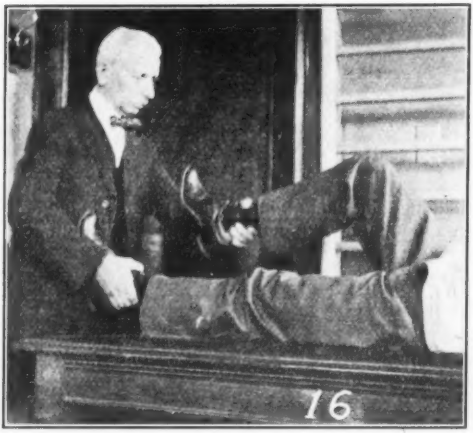
external rotators of the ankle, are usually the weaker and need most attention.

(3) The patient is told to elevate one leg at a time, keeping the knee straight. While this

leg is coming down the other is elevated. This is in imitation of a walking motion, and for a long time needs the operator's assistance, never his resistance.

(4) A movement somewhat similar to the last is to command the patient to "tread water," that

is, he partly flexes the hip and knee and pushes down against the operator's resistance. (Illus. 16.) As one leg is straightened the other is flexed. The operator offers assistance or resistance while holding the patient's feet.



Exercise V.—(The patient lying on his back.)

(1) The operator commands him to flex and extend his ankles.

At first he assists and later resists. The movement is performed, first, with one ankle at a time and later with both together, alternately or simultaneously. The ankle remains weak for a long time. In some cases it is never fully restored. But, in one case, a woman of 26 who had been afflicted in childhood and retained a weak ankle, regained normal control and strength by keeping up this exercise for about fifteen months.

Second. Another exercise of the ankle which supplements the above is for the patient to flex the ankle as he rotates the foot outward. This is done at first with assistance and later with resistance. One ankle is exercised at a time, and later, both at once, moving alternately or simultaneously.

Third. The patient is told to evert the foot; that is, to turn up the outer edge. The operator assists and later resists.

The above outline is very limited when one considers all the movements that are possible to the human body. But they are merely given as types. According to the patient's specific needs and strength, we often have to introduce corrective movements. These will be given in some future article. Some were given for the spine in the September JOURNAL. As soon as a patient is capable of performing exercises by himself we outline hygienic programs.

For paralysis following cerebral hemorrhage, or for disability or atrophy following fractures or other injuries, the line of treatment explained above is applicable. This is especially true for cerebral hemorrhage sequalae. All movements are given at first assistive and, as soon as the case warrants it, resistive. Progress is usually quite rapid after cerebral hemorrhage; that is, if restoration is at all possible, and in comparison to progress in infantile paralysis. In atrophied members following fracture, so much depends upon the amount of destruction caused by the injury that no outline can be given as typical. But the general principle of assistance and then resistance to movements always obtains.

MENTOR BLDG.

[EDITOR'S NOTE: In alternate issues of the JOURNAL illustrated articles on the treatment of definite condition by exercises will be given. The gymnastic treatment of tabes dorsalis will be given in the January number.]

THE TREATMENT OF TUBERCULOSIS

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Chicago, Ill.

The treatment of tuberculosis should be based upon a recognition of the conditions as found upon the examination of each individual patient, together with the results of the investigations made into the pathology and the progress of the disease by various investigators.

Etiologic Factors—The correction of whatever factors are found which have been instrumental in causing the disease in that particular individual, and which are efficient factors in perpetuating the disease, must be removed as speedily as possible under the circumstances in each case. It must be urgently insisted upon that each patient is, to some extent, a law for himself, and the most speedy and complete recovery is secured only when the entire individuality of each patient, his history and his environment, his

Tuesday lecture, November 9, 1915, before the A. T. Still Research Institute.

tastes and his mental habits, are taken into consideration.

The corrective work upon his body includes usually two factors—first, the lesions which lower the body resistance to tubercular invasion; and second, the lesions which permit the invasion of the particular tissues affected.

Since the publication of the experiments of Dr. C. A. Whiting, in The Pacific College of Osteopathy, the place of lower thoracic and lower rib lesions in lowering the phagocytic index and the opsonic index to tubercle bacilli must be recognized. Nearly all tubercular patients have unusual rigidity in the lower thoracic region, and also they have drooping lower ribs. This is the case without regard to the locality affected by the bacilli. Therefore, in all tubercular patients, especial attention should be given these vertebrae and ribs; even when no recognizable lesions are found, the increased tension of the tissues of this part of the spine should be noticed and corrected.

The correction of these lesions is easy in the earlier stages of the disease, but after the formation of cavities and abscesses is suspected, considerable care is necessary, in order to prevent the danger of injuring the walls of these formations, as well as of precipitating hemorrhages.

Lesions responsible for the hospitality of certain tissues to tubercular invasion vary according to the locality affected. Lesions of the upper thoracic spine and upper ribs are present when the first injury is to the upper lobes of the lungs, as is so often the case. Lesions of the mid-thoracic region are associated with injury to the middle and lower lobes of the lungs. Laryngeal tuberculosis is more frequent in those who have also lesions of the cervical vertebrae, and contractions of the cervical muscles, as well as the upper thoracic vertebrae.

Intestinal tuberculosis is associated with lesions of the lower thoracic spine, as is tuberculosis in almost any part of the body; in this case the general lowering of the bodily resistance is associated with the specific area involved. Why it is that the intestinal tract so often escapes is not easy to determine.

Kidney lesions are associated with disturbances in the vertebrae and neighboring tissues of the eleventh and twelfth thoracic segments, from which arise the vaso-motor nerves to the kidneys, and the secretory nerves to the supra-renals. So it is everywhere—in almost every case efficient factors are found which are more or less responsible for the presence of the disease in the organs affected. Naturally, the correction of these lesions as found is important; naturally, also, this correction must be made in such a manner as to prevent injury to the tissues already seriously diseased.

When the patient's occupation is such as to perpetuate his disease, he must be given other employment, if possible. Very often poverty prevents this change of occupation; it must be remembered that while a change may mean poverty, yet a lack of change may mean death. A study of conditions will usually show some way in which the required relief from occupational causes of this disease can be eliminated. Sometimes only a slight change is needed—out-of-door work may be substituted for indoor work; better ventilation may be provided; home work may be planned and thus the hours be diminished; there are many ways in which better conditions can be provided, even when the complete change is impossible. Yet this, if practicable, is the important thing to advise.

Climate and Environment—The need for fresh air, preferably that of the open, is generally recognized. The patient must be kept warm and comfortable, at all costs, and the air must be very freely supplied during every hour of the day and the night. Constant living in the open is the best thing, if this can in any way be secured—always with warmth and comfort. In mild climates this is easy enough—a bed is placed upon the roof or an open porch, sometimes with a roof, sometimes with a rubber or oilcloth covering, to prevent the rain from wetting the bedding, and that is all that is necessary. In climates with severe winters, it is not so easy to manage. Cots which have tent tops, through the walls of which the air passes rather freely, are sometimes commended. A porch with movable walls,

which can be shifted so as to prevent the effects of hard winds, or driving snow, rain or sleet, are employed sometimes. There are several hood-like appliances on the market, by means of which the patient may lie in bed within a room, near a window, and this hood or tunnel-like affair carries the outdoor air to his face. This arrangement has also the advantage of saving other occupants of the same room from breathing the unpleasant breath of the sufferer. These are excellent contrivances in cases of poverty, where better plans are unpractical.

The change of climate so often recommended is decidedly of value in the earlier stages of the disease. When a patient from a severe climate goes to one which is very much milder, there may be too great loss of strength—he misses the bracing quality of his home air. High altitudes are generally recommended. The improvement noticed during the first and second stages of tuberculosis upon being taken from a low to a high altitude is often surprising; it sometimes happens also that a change from a high altitude to sea level is followed by speedy relief from the symptoms. If a high altitude gives no relief, or if the disease was contracted in a high altitude, a visit to a locality nearer sea level should be advised, if possible. A dry climate is almost always better for tubercular patients. Even cold, dry air is very beneficial.

Probably it is never good to send patients to tubercular resorts without first investigating the sanitary provisions. Very often localities where tubercular patients are sent are exploited for commercial purposes to such an extent that the entire locality becomes filled with the odor of tubercular breath, dust full of tubercle bacilli, and the sounds of coughing and difficult breathing. Food is poorly prepared and very expensive, unsuitable for such patients, and more or less contaminated. Tents are usually used for housing in these, as in many altogether admirable sanitoriums, but in the unwholesome places they are placed too close together, and have inefficient arrangements for bathing, sputum destruction, and other sanitary needs. Before sending a patient to any sanatorium these matters should be thoroughly investigated. There are many places in the mountains and the west, in the south, and in the neighborhood of many large cities, where every provision is made for good sanitation; where the tent houses, or other arrangements for open air living, are planned so as to be comfortable, clean, wholesome. Games, music, and other plans for amusement are planned — these need not be very expensive, but a contented and happy frame of mind is of real physical value. In such places the food is well selected and wholesome, and every condition is given which makes for speedy and uncomplicated recovery.

When a change of climate is made, and improvement occurs, the patient should remain in that place for much longer than is usual. The place of recovery is the place to keep well. If possible, he should make such a place his home, for years. Too often it happens that one who has made what seems to be a good recovery under the favorable conditions in a mild climate returns to his home, lives indoors, perhaps overworks, to save money lost during the sickness, or for some other reason, neglects the dietetic needs of his condition, and dies during the first winter or spring from acute miliary tuberculosis. Patients who are apparently on the road to recovery in low altitudes sometimes go to high places, in search of more speedy recovery; this is a dangerous experiment. Where improvement is found is the place to stay.

Dietary—The diet for tubercular patients has been a matter of considerable dispute. The exaggerated stuffing regime of a few years ago has been largely superseded by more rational procedures, in most places. There is no question that increased nutrition is a most important consideration, but increased nutrition does not necessarily follow increased swallowing. It is no longer considered good to compel a patient to swallow two dozen eggs, three pounds of rare meat, three quarts of milk and cream, each day—as was not rare a few years ago. When the osteopathic treatment is given carefully, there is rarely any need for a

forced diet at all. In a few cases it may be necessary to compel a few meals, and perhaps to compel the use of certain classes of food, at first, but the treatment should be speedily followed by an appetite that makes good food and plenty of it the natural thing. Education of the patient may be necessary, if he has been in the habit of using improper foods.

In some sanatoriums the "calory feeding" is employed. A menu is given each patient, upon which the number of calories in each helping of each article of food is given. The patient chooses whatever food he likes, but the sum of the calories must equal or exceed that advised for him after his physical examination has been made. In this way a correct amount of food of the kind that he likes best is eaten. A table of calories can be given intelligent patients for home use, and such patients are instructed to choose from the food listed whatever they like, and to eat enough at each meal to make a total of the calories necessary for increased nutrition.

The foods best adapted to tubercular subjects include chiefly the proteids, fats, and the fruits and vegetables which give various inorganic salts, especially iron. Starchy foods and sweets are added in moderation, but an excess of these is to be discouraged. Tubercular subjects seem to be able to handle even larger amounts of proteids than normal individuals—they need a larger proportion of these foods than is usually indicated under normal conditions. Care must be exercised, however, to see that the proteids are well handled—if intestinal putrefaction occurs, the harm which results may undo the work of weeks of upbuilding. An occasional urinalysis and physical examinations keep this matter in check.

For the proteids, meat, eggs, fish, milk, sometimes cheese and nuts, are old friends. Many patients think they cannot take certain foods, especially eggs and milk. Such patients must be made to understand that they probably owe their infection to poor nutrition, which may be due to these very ideas, and their co-operation must be given if they are to recover their usual health. If they show obstinacy, much firmness and a great deal of tact may be necessary. There is a certain psychological good in securing their co-operation in overcoming these antipathies, as well as the better nutrition which follows the use of foods long absent from the dietary. In overcoming such antipathies, the taste of food may be disguised in many ways. The white of egg may be given alone, or may be added to other foods—the beaten white of egg on top of a bowl of broth, or of chocolate, or baked alone, or beaten up with fruit juice, is often very pleasantly received. Custards are good. Many foods include eggs, and these may be made with increased numbers of eggs. If the patient is really unable to digest eggs, such foods will be harmful; if he is simply whimsical, he can handle these foods well, and can be taught to eat the more wholesome soft boiled eggs, poached eggs, omelettes, etc., by degrees within a week or so. If milk is not well taken when fresh, it may be given in the form of buttermilk, either from churned cream or made with the commercial bacilli, or in rennet puddings of various flavors, etc., or as clabber, or in the form of cream soups, broths, custards, and other foods prepared with milk. He may be educated to the point of taking fresh warm milk, in most cases, and this is probably the best manner of taking it.

It is rare that patients refuse meat; though sometimes there may be a feeling against flesh foods. Usually it is better to induce them to lay aside their prejudices or religious persuasions, etc., temporarily. If it is an antipathy to the taking of life that is at the root of the antipathy, there may be considerable difficulty in persuading them to eat meat at all. Milk and eggs may serve the purpose, but the most speedy recovery can be made if people who have been long on a vegetable diet can be induced to eat meat. Generally speaking, any article of good food that has long been refused is the one that gives the most speedy increased nutrition—it is the one which contains the elements most needed by the body.

The fats are best given in the form of cream, butter, bacon and olive oil. Nuts

contain much fat, and are sometimes well handled, though this is not always the case. Cream contains the fat as an emulsion; is very pleasant to take, and is usually very well digested. Cream may be used with many kinds of food, and should be left on the milk. Occasionally the skimmed milk is more acceptable to the patient; in such a case the cream should be added to other articles of food. Rarely cream is not well digested, and other fats may be substituted.

Butter is almost universally well liked and well digested when eaten with vegetables, bread, etc., and may be added to foods as they are being prepared. It should not be cooked with food, however.

Bacon should be broiled, should be thinly sliced, and not cooked to a crackling, but should be just crisp and appetizing. Olive oil can be given if the patient likes it. If he does not like the taste, it can be used in salad dressing, especially in mayonnaise made with lemon juice and egg yolk with any desired flavorings, and considerable quantities can be taken in this way, even by persons who object to the flavor of the oil. Olive oil can be added to cream, too, though care must be taken to prevent the flavor of the oil from causing an antipathy to the cream itself.

There is no particular reason why any one fatty food should be insisted upon. If a patient takes enough cream, he can let the olive oil alone; if he takes olive oil plentifully, there is no reason for particularly insisting upon the cream. In this respect the fats differ from proteids—it is rather necessary to have as many forms of proteid as possible, whereas one kind of good fatty food provides for the dietetic needs fairly well. Probably it is better to have a variety of fats, since more can be eaten in this way, and there is less danger of becoming tired of any one; but if only one is relished and is eaten freely, that is good enough.

The carbohydrates are to be given according to appetite. Usually any patient will eat relatively enough of bread, potatoes, sweets, etc. These foods are useful, and should be provided in varied forms. Cereals should alternate. Preparations of oats, wheat, barley, rice and mixtures of these grains, variously cooked, roasted, steamed, etc. are on the market. Just ordinary whole wheat, boiled, is very good. These may be eaten with cream or butter, but preferably with no sugar. Many fads are extant concerning the propriety of various combinations of carbohydrate foods, and each diet kitchen has its own customs.

Bread can be eaten according to taste and custom. The antipathy to white wheat bread is not well based—eaten in moderation it is a wholesome food. Excess of any starch is to be avoided. Alterations of various breads provide a more appetizing fare. Corn bread, rye and barley breads are sometimes appetizing. Perhaps the patient's appetite can be left to determine the amount as well as the kind of bread to be eaten—so long as he eats enough of the proteids and fats and vegetables.

Sugars may be eaten within ordinary limits. Candy between meals is not to be allowed, but it may be served as a dessert sometimes. Honey, dates, figs, raisins and sweet fruits are more wholesome and more nutritious, generally, than is too much cane sugar; though this has its proper place in the dietary. An excessive proportion of carbohydrates is always to be avoided; though as long as the necessary amounts of proteids, fruits, vegetables and fats are eaten, the carbohydrates may usually be safely left to the appetite of the patient.

It is often advisable to give four or five small meals each day, rather than the usual three meals. The regular meals may be given at the regular hours, and a lunch of milk, or fruit, or broth, or any good, simple, single food, be given in the middle of the morning, the middle of the afternoon, or just before bed time. No solid food should be given during the afternoon fever, if this is present, but a glass of fruit juice, or some such thing, may be very refreshing and pleasant.

One patient could not digest milk, had hives whenever she ate eggs in any form, however disguised, and had an antipathy to meat, based on esthetic and religious grounds. She had been trying to secure the necessary protein from nuts

and leguminous foods, which were not enough to keep her in nitrogenous equilibrium; her very mild attack of tuberculosis was associated with very marked emaciation. She could not at first be persuaded to eat meat or fish in any form. Her attention was drawn to the great value of vegetable life,—the wrong done in cutting down a great tree appealed forcibly to her esthetic sense. Then the fact that the humbler plants were also sharers in the glory of life, was brought out, and she soon was brought to the point of admitting that the life of a plant was as sacred as the life of an animal. This realized, she was faced with the fact that it was a matter either of starvation or of saving her own life at the expense of other life—and that the plant and animal were probably one in honor. So she decided to eat that which was best adapted to increasing her efficiency in the work which waited her hands; meat was eaten with a clear conscience, and her improvement in health was prompt and permanent.

In order to overcome whimsical notions concerning diet—or notions which are not whimsical, but which prevent the best nutrition—it is necessary to recognize the root of the antipathy, and to meet each problem by means adapted to the individual complications. The better digestion and appetite which are associated with a clean conscience and the absence of antipathies to food eaten is worth the time and trouble that are necessary for the re-education of patients along dietetic and hygienic lines.

Sometimes patients think themselves unable to take raw fruits or vegetables. Whether this is only a notion or is a fact, they must be brought to use these foods. It is better at first to have them cooked, if they can be taken in that way—if they cannot be taken even when they are cooked, soups containing them may be given, and the amounts of the vegetable eaten in the soup will be increased. Just the broth containing very small amounts of the vegetable may be given at first, if necessary. The juice expressed from the ground raw vegetables may be taken, in considerable amounts of hot or cold water, or added to broths, etc. A teaspoonful of such vegetable juice in a day is enough at first; this may be increased gradually. As soon as it can be managed, the ground raw vegetable may be added to salads, etc. Celery, lettuce, raw cabbage, carrots, onions—indeed, practically all vegetables that are usually eaten raw, as salads, are very important factors in the tubercular diet list.

Most patients like fruits, though there are occasionally some who think themselves unable to eat them raw. Baked apples are usually well taken, as are the ordinary fruit sauces. Raw fruit sliced into gelatine sometimes helps in overcoming this antipathy. Sometimes when the fruit is sliced and served with sauce or custard it will be eaten, or when two or more fruits are combined to make a fanciful dessert. It is necessary to combine those fruits which belong together, to avoid digestive complications. Fruit juices can be given when the fruits themselves are refused. These substitutes are to be used to pave the way to more rational habits; within a week or ten days all these peculiarities should have been educated out of the patient's mind. Only those who have an actual physiological idiosyncracy for special articles of food should fail to eat the simply cooked, simply served succession of varied and wholesome foods which make up a rational dietary.

Care of Symptoms—In the treatment of the symptoms as they occur, considerable variations are to be considered in dealing with each patient. For the afternoon fever, there is one rule which should be held practically absolute—no exercise, no physical or mental exertion is to be permitted. The patient must lie down and be quiet as soon as the temperature reaches 100° F. and as long as it remains above that figure. If he is too restless, he may read a little, but if it is in any way possible for him to do so, he should lie absolutely quiet during that time. When the temperature goes down, and during the morning when the temperature is normal or subnormal, he may be up and around about as he pleases. But he must rest during the afternoon fever. He does best if he lies in a cool and quiet place, not too brilliantly lighted, and either sleeps or dozes most of the time. A little quiet talking may keep him amused, if this is pleasant, not exciting, and convenient. In a sanatorium some diversion may be provided for this time, or

absolute rest may be compelled; customs differ in this respect.

The hemorrhages vary according to the location of the tubercles. Sometimes death occurs before any severe hemorrhages have been noticed. In the treatment of these rest is important. Strong inhibition of the tissues around the tenth to the twelfth thoracic spines lowers the blood pressure and lessens the hemorrhage. Feeding of gelatine rather freely seems to increase the coagulability of the blood to a certain extent.

The cough may be slight and not painful, or it may cause severe suffering and prevent sleep. Muscular contractions of the cervical region, or lesions of the cervical vertebrae, increase the tendency to cough, probably through the vagus center. Correction of these lesions lessens the severity of the cough, but does not seem to lessen the efficiency as far as raising the sputum is concerned. Very gentle and steady pressure upon the contracted muscles in the interscapular region usually causes relief from the spasms of coughing. Sometimes the patient can stop or prevent the cough by bending the head forward and allowing all the muscles to relax, while in that position. This is usually followed by a looser cough and the raising of considerable quantities of sputum.

Prognosis—In the early stages of tuberculosis, with obedience to instructions and proper osteopathic treatment, the prognosis for complete symptomatic recovery should be absolute. The patient should be ready to remain under observation for five years—though the treatment should not be needed longer than the first or perhaps the second year. After recovery seems complete, the weight should be noticed, and any diminution below that which is considered normal for the height and age of the individual should be followed immediately by the treatment, rest and diet suitable to the conditions as found on examination. If the weight and health remain unimpaired for three years after recovery seems complete, the patient has a good bill of health, and can probably go anywhere and do anything which ordinary people do. The tissue which has been destroyed can never be replaced by normal tissue, but the presence of the small scars which are left is not incompatible with good health through a long lifetime of activity.

In the later stages of tuberculosis, the prognosis must be guarded. With good treatment, attention to hygiene, and good diet, recovery may be hoped for up to the time when the lungs are seriously injured. When recovery occurs, the patient should remain in the climate which has given him the recovery, and he should stay by the diet and the hygienic conditions which have enabled him to overcome the disease, for at least five years. He need not remain in a sanatorium—that would perhaps be a very bad thing for him to do—but he can take the sanatorium habits home with him. This is the easier, since these habits are good for practically everybody, and if his family shares with him the open air living, the regular, wholesome foods, and the hygienic habits generally which he has learned at the sanatorium, they will be all the better for having done so.

In the later stages, when the lungs are more than half gone, when miliary tuberculosis infects many of the tissues of the body, when the digestive tract is infected, hemorrhages are severe, the afternoon temperature is persistent and high, the cough painful and severe, the only thing to be done is to make the patient comfortable as long as he lives. Much relief can be secured from suitable treatment. During this time the patient should be allowed to eat as he chooses, since recovery is probably impossible.

Even up to the very last days of life, the prognosis for some relief of symptoms is good, and these sufferers should be made quite comfortable, for the most part.

Those who have not seen the relief given by careful and well-judged osteopathic treatment during the earlier stages of the disease would find it hard to believe how much more speedy and certain recovery is made thereby; those who have not seen how greatly the symptoms are relieved, and how much more comfortable a patient is made during his last weeks of life, find it hard to believe that so much rest and freedom is possible for dying tubercular patients.

INTERNAL SECRETIONS

D. H. Hardie, D. O.,
Galena, Ill.

We find that the pituitary, thyroid, parathyroids, adrenals, spleen and pancreas are holding the most prominent position in works on this most interesting side of medicine. Most observers have concluded that the spleen and pancreas work in harmony, and the pituitary, thyroid, parathyroids and adrenals work together and are called the adrenal system, on account of the close connection they hold to one another, the nervous system of each being very intimately connected up and their functions very much in unison. With the spleen and pancreas it seems that the secretion of one depends on the other, and if they do not work in unison the secretion of neither will be effective. Or, as Kirk says, "The body is a complex machine; each part of the machine has its own work to do, but must work harmoniously with the other parts. Just as a watch will stop if any of its numerous parts are broken, so the metabolic cycle will become disarranged or cease altogether if any of the links in the chain are broken down."

All the internal secretions leave the organ secreting them by either the blood or lymph stream. From the thyroid and the parathyroids they go through the lymph channels, thence into the venous and finally into the arterial system direct to the tissues. The other glands secrete directly into the blood stream, thence into the tissues.

To give a real concise and intelligent definition of internal secretion would be difficult; but the following covers the subject fairly well; an internal secretion is the specific product of a ductless gland or any other gland, by virtue of which it passes into the organism itself, by way of the lymph or blood channel.

Since the rapid advancement of this study, it has been found that some of the internal secretions are vitally essential, while others seem not so necessary. That is, if an internal secretion of one gland is suspended, the secretion of some other gland will compensate for it. Whereas total extirpation of the thyroid will not cause death; it will cause very severe nervous symptoms which are only relieved by feeding the extract of this gland. Again, if the thyroid and the parathyroids are removed death follows very rapidly. The removal of one adrenal will not cause very severe nervous symptoms, but the removal of both will cause almost instant death. And so we may go on to show that the point made before is correct, that the secretions of some glands are vital to life, while others are not. But all are necessary to a real life, even the appendix itself, as we will show later.

Now let us go on and attempt to link up the relation of the different internal secretions, beginning with that one which seems so necessary to the body economy, the adrenals; but first let me cite the four means of determining the actions of the internal secretions: First, the gland is totally removed and the resulting effects noted; second, the effect of disease of a specific gland is noted and also how and where new specific symptoms arise; third, extracts of the gland are prepared and then injected into healthy animals, and the effects of this are noted and worked out in relation to the gland as to position, association, size, ductless, etc.; fourth, the gland is transplanted and the effect of the return to normal function of the gland is noted.

The adrenals or the supra-renal glands are so small and isolated in the covering of the kidneys as to seem almost insignificant. Yet without these two little organs man can not live. Although closely connected anatomically with the kidneys, physiologically they are as distant as any other gland, in that their influence over the kidneys is through the blood stream, as it is to all other structures. Now, we have said that death is caused by complete extirpation of the adrenals. This is again proven by the fact that there is hemorrhage into the substance of these glands after disease in them or from disease causing high blood pressure. Again, if there is disease of a malignant nature in one gland and it passes to the

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system by metastasis, death follows. To prove the statement we made that the secretion of the adrenals passes through the blood, the blood from the supra-renal vein when injected gives the same results as when adrenal extract is injected as, raising the blood pressure and increasing oxidation being the most important, while extirpation has the opposite effect, lowering the blood pressure. Now it is a proven fact that when the nervous connection is cut off, injection of the adrenal extract causes first a stimulation of the spinal cord and heart and soon the opposite, for in all cases the effect lasts a very short time. There is normal metabolism when all connections to the adrenals are cut off except the blood stream. This ought to be ample proof that the secretion passes out through the blood.

While increased functioning of this gland causes increase of blood pressure, if there is too much increase it is likely to cause adrenal hemorrhage and death (the capsullary hemorrhage being the most severe). After disease there is no new gland tissue formed in the supra-renals. Another very interesting fact in this connection is that while stimulation of the splanchnics does not increase the amount of blood coming from the adrenals, it does increase the amount of their secretion. The fact that extirpation of the adrenals causes vascular dilation, while injection of the extract causes vascular constriction of the splanchnic area should be of interest to us as osteopaths because, without either, we get the desired results by our corrective work in this area of the spine. Here, again, congestion of the abdominal blood vessels caused by toxic products is liable to cause adrenal congestion, and, as we have shown before, hemorrhage and death.

The adrenals are of a very delicate structure and on this account are like thermometers to the system. They are liable to lesions from over-functioning, and especially prone to be affected in any disease of high temperature. Being in such close approximation to the blood vessels makes them susceptible to numerous infections, and, as the adrenals play such an important part in the functioning of the body, it follows that in any disease much depends on the amount of damage to these glands. The foregoing facts show that drugs, like all other toxins, will act in a detrimental way on the delicate structures of these tissues. Large amounts of drugs or any other poisons in the system will cause the symptoms of muscular weakness, lowering of blood pressure and drop in temperature. This is also the effect of the removal of the glands, and any drug which lowers or raises the blood pressure will have this same effect, in toxic doses on the system. Thus again proving that the adrenals are the delicate organs likely to be affected.

Now to conclude the adrenal secretion: After the secretion passes out from the medulla of the adrenal to the organism through the blood stream, affecting the various organs already cited, it appears to have a vast amount to do with oxidation. It has no apparent influence on lung tissue proper, but an intimate connection with the respiratory center. This secretion in the blood absorbs the oxygen from the air, changes it into hemoglobin in the blood plasma and finally passes to the tissues. All experiments on this secretion prove without doubt that it has a great affinity for oxygen. Now we know that hemoglobin has the same; and some other of their likeness in properties are that both dissolve in alkalies; injection of adrenalin causes increase in the consumption of oxygen and the output of carbon dioxide; all strongly indicating that it is the internal secretion of the adrenals that has attraction for the adrenal secretion in excess causes a high temperature and glycosuria, and when the glands are diseased a subnormal temperature. Finally the function of the internal secretion of the adrenals is to maintain vascular tone and sustain pulmonary and tissue respiration.

Passing up anatomically in the adrenal system we next come to that most interesting gland, the thyroid, and along with it the parathyroids or accessory thyroids. The importance of these glands has been hinted at, and it is a very interesting and important

factor that the older the individual the less severe are the symptoms of thyroidectomy, although, in all cases, thyroidectomy lays the individual to less antitoxic properties in disease, and especially are they more prone to tuberculosis and pneumonia than previous destruction or removal; puts a stop to all progress and in the young causes the individual to become of low-grade intelligence, hinders growth of skeletal bones and there is usually a thickening of the skin. On the other hand, the parathyroids can be removed and death will eventually follow. Although most often two parathyroids are found, as many as six have been discovered, and these glands are more or less functionally independent of the thyroid. It is a proven fact that a transplanted thyroid will have the same effect as when in its old seat of anatomical relationship. (And the smaller the piece transplanted the better.) The best results gotten by transplantation are intra-spleenic, -peritoneal, or -osseous.

The thyroid secretion has important effects for good after the gland has been extirpated, when given internally in proper doses. The important function of the thyroid secretion is its effect on nutrition and metabolic activities, both in the cutaneous tissues and the organism at large. The parathyroids also act as strong anti-toxic agents in the body economy and their ultimate action is thought to be brought about by their influence over the metabolism of calcium salts.

Thyroid extract has, like adrenalin, an influence on the absorption of oxygen in that it will cause it to be increased in an individual who needs it, e. g. a cretin. The similarity of function of the thyroid and the adrenals is thought to be accounted for in the fact that the internal secretion of the thyroid acts as a stimulant to the adrenal secretion. And this is again proven by the truth that cessation of the thyroid secretion causes a decreased power of the blood to take on oxygen, and therefore oxidate.

Again, large amounts of thyroid extract administered cause people to grow emanciated and have temperature, and in the adrenals hypoadrenalism causes a fatty disease in these glands. Another function of the thyroid secretion is to control the toxic products of the body and use them transformed for the best interests of the organism. Then, to summarize our facts as to the thyroid and the parathyroids, it is fairly proven that of these two glands the secretion acts in such a way as to increase the sensitiveness of the cells, with phosphorous in them to the oxidizing action of the adrenal's secretion. They also act in this way on the toxins and bacteria in the blood, so as to have them likewise oxidized.

It is a proven fact that the pituitary body governs oxygenation, metabolism and nutrition in all vertebrates because in these there is an adrenal system which is always nervously connected intimately, and, therefore, governed from one center.

Just a few facts before we go further: The secretory activity of the sweat gland is increased in proportion to the amount of the adrenoxidase laden plasma of the blood in its epithelial and muscular elements. As the adrenals and the kidneys are governed by the pituitary body, any toxin that excites it will, necessarily, increase general oxidation and renal secretion. As far as is known, there is no internal secretion from the kidneys. All results in favor of this theory have been proven to be from the effects of the adrenal secretion.

Coming to the vermiform appendix, it is found that it does have something very important to do with digestion, in that it supplies the caecum with bactericidal ferments and their products—phagocytes and alexocytes, and also anti-toxic blood serum.

Finally, in the spleen and pancreas we find two very interesting glands in this discussion. The spleen produces leucocytes and iron pigment, both of which are carried direct to the liver by a particular blood system. Now the pancreas is proven to be, and is considered to be, the organ that produces glycogen primarily. Its amylopsin prepares the starch in the intestine, and it is then ready for elaboration into glycogen in the hepatic cells, and its internal secretion converts this product into dextrose.

The pancreas and the spleen are consid-

ered together because their secretions depend one on the other. Again, we find that all drugs that overstimulate the adrenals produce an increase of sugar in the blood. It is also proven that in copious alimentation glycosuria is present. But the former condition is serious on account of the fact that in diabetes less oxygen is taken in and less carbon dioxide given off, ultimately resulting in death. Again, any drug that produces an over-stimulation of the adrenals causes a glycosuria.

Removal of the pancreas is not fatal, if a small part of the gland is left; but its total extirpation means death to the individual. The spleen can be removed with comparative safety. Again, the relation of these two glands is brought out in the fact that the internal secretion of the spleen is needed to change the trypsinogen of the pancreas into trypsin; and although spleenectomy is not necessarily fatal, it causes a very severe condition to the digestive system. Adrenoxidase is necessary to the functioning of the spleen and pancreas as is the vagus in their nerve supply.

In proof that the pancreas has an internal secretion, it is proven that injections into the duct of Wirsung do not reach the entire gland, especially the spleenic end or tail. Also ligature of the duct has no effect on these same parts pathologically, thus showing that parts of this gland must send out the secretion from these parts in another manner, *e. g.*, by the blood or lmyph streams. From these proofs it follows that the adrenals control sugar in the blood through the pancreas, as impaired function of the pancreas causes increase of sugar in the blood. Also trypsin is not oxidized trypsinogen. Trypsin is the anti-toxic body of the pancreas and the spleenic juices and its function is to digest albuminoid food. Again, the removal of the pancreas causes the formation of sugar to cease (except ptyalin glycosuria). Finally, the main function of the spleeno-pancreatic secretions is to protect the system from the toxic derivatives of the albuminoid bodies of end and ex-ogenous bodies.

Suming up the three glands, spleen, pancrease and adrenals, all work together for a perfect oxidation and digestion and with these the entire adrenal system must be in perfect harmony.

DIAGNOSIS OF DISEASES OF THE SPINAL CORD

(FOURTH PAPER)

J. Ivan Dufur, D. O.
Philadelphia.

Defects of Sensation—(Continued)
Ataxia

ATAXIA is an objective symptom of sensory defects, and indicates a disturbance (lesion) affecting the spinal cord paths that carry impressions of muscular sense. Ataxia is so called because under the conditions that produce it the usual measured (coördinated) muscular movement is disturbed and in-coördinated, unmeasured or uncontrolled muscular action is substituted.

All automatic and voluntary movements are guided by impressions received through muscular sense and when these impressions are lacking movement becomes awkward. Coördinated movement can be produced by the aid of the eye to determine the sense of position, and an ataxic will always perform an act with more normality if he watches the part in motion. To determine the presence of ataxia, therefore, the patient should be instructed to attempt an act with the eyes closed, when the symptom of ataxia is readily developed.

Lesions of the spinal cord that produce ataxia are those that affect the posterior external columns, column of Burdach, through which the fibers pass that convey impressions of muscular sense. These fibers pass upward and downward in the column of Burdach, sending their collaterals into the posterior gray matter of the spinal cord at different levels, so that impressions coming in through a single nerve are conveyed to many segments of the cord. In addition there are long fibers passing to the medulla by way of the column of Goll. The fibers first mentioned (in the column of Burdach) serve to convey impressions

of muscular sense which regulate (coördinate) automatic and involuntary movement. The fibers that pass up in the column of Goll are carried above the medulla over new sets of sensory neurons (some to the cerebral cortex and some to the cerebellar centers) and serve by the impressions of muscular sense they convey to coördinate voluntary action.

To properly guide any movement, however simple, a very extensive action of a large number of muscles is required. This action is guided automatically by the muscular sense, and it is only when this muscular sense is interfered with that one realizes its extensive use and its constant function.

Any disease whose lesion lies in the posterior columns of the spinal cord will be marked by the presence of ataxia. But the most common disease in which it is noted is tabes dorsalis (posterior sclerosis). Ataxia is the dominant symptom of this disease and it is popularly known as locomotor ataxia. Other conditions that are marked by ataxia are tumors within the cord, syringomyelia and general myelitis, when these pathological conditions affect the posterior columns. Tumors of the spinal meninges on the posterior surface of the cord, and multiple sclerosis (when the patches lie in the posterior columns) are capable of producing ataxia.

Gait in Spinal Disease

For an exhaustive discussion of the gait in nervous diseases the reader is referred to an article from the writer which appeared in the February, 1915, number of the Journal. Practically speaking three types of gait may occur in disease of the spinal cord. They are popularly known as the spastic gait, the paralytic gait and the ataxia gait.

The Spastic Gait is stiff, and is due to the muscular rigidity. The hips and knees are held rigid and adducted, and there is a tendency to overlapping of the knees. The feet are not lifted from the floor, and are dragged or pulled forward with effort, the great toe scraping the floor. The tendency to ankle clonus produces trepidation (described in the second paper of this series) of the entire body from the shaking foot. The patient cannot step freely, and hence steps are short but regular in length. Rising from the chair or sitting are accomplished slowly because of an apparent resistance to flexion and extension of the joint. The diseases producing this gait are those whose lesion lies somewhere along the pathways of the cortico-spinal (upper motor) neurone. This gait is complementary with the exaggerated reflexes, rigidity, partial paralysis, etc., that go to make the clinical picture produced by a lesion affecting the lateral columns of the spinal cord. We find it in such diseases as lateral sclerosis (spastic paraplegia), descending degeneration of the lateral columns below the level of the lesion, in syphilitic paraplegia, the early stage of acute myelitis, and in the early stage of amyotrophic lateral sclerosis. It is also seen as a result of transverse lesion of the cord in Pott's disease, in transverse myelitis, softening from thrombosis, hemorrhage or tumors of the cord. It is present after all forms of cerebral disease and is then usually in the arm and leg upon one side (hemiplegia), except in congenital cerebral atrophy (imbecility) when a double hemiplegia (diplegia) is found. Primary lateral sclerosis (an uncommon condition) and syphilitic paraplegia are both marked by a spastic gait, but in these diseases the arms are not affected.

The Paralytic Gait has for its dominating elements the complete paralysis and flaccidity of the parts. The lesions that produce it are those that affect the gray matter alone or the entire cord, in its lumbar enlargement. As the muscles grow weaker, and the ligaments of the joints weaken, the support of the joints becomes imperfect. The aid of a crutch is then needed to support the hip. There is a tendency to overextension of the knee, and to turning of the ankle. The thigh paralysis makes lifting the feet impossible and the leg is dragged along the floor, the inner side of the foot touching the floor, the leg dragging loosely as it is pulled forward between the crutches. There is no stiffness and no

uncertainty. Drop-foot is present if the anterior tibial muscles are paralyzed, and if it be only paralysis the leg is lifted high to avoid stubbing the toe. This is sometimes called the "stepping gait."

As stated above the lesion that produced this gait lies in the anterior horn of the gray matter of the spinal cord, but, of course, a lesion affecting the lumbar enlargement of the spinal cord in its entirety would also produce it. It is a prominent symptom in those diseases which are produced as a result of lesion affecting the spino-muscular (lower motor) neurone (when the lesion is in the lumbar regions).

The paralytic gait is therefore found in anterior poliomyelitis, syringomyelia, general myelitis in the late stages, transverse myelitis at the level of the lesion, multiple sclerosis (when the insulae are situate in the reflex arc), tumors and hemorrhage at the site of the lesion.

The Ataxia Gait is an uncertain (unmeasured) gait. The steps are of irregular length. The patient does not place the foot upon the ground in the position he desires Hence he loses his balance frequently and makes irregular efforts to maintain it. Rising is accomplished with difficulty and the feet are spread far apart. The patient then sways for a moment to get his balance. With advancing disease the steps become more irregular, the tendency being toward steps that are too long. The foot is lifted too high, and is suddenly and violently stamped down upon the floor. These characteristics have given the gait the name "stamping gait." The feet are always placed too far apart as the patient requires a wide base for support. An attempt to walk sideways or to walk backward or to walk with the eyes closed increases the irregularity. This type of gait is found in all those disease in which the lesion affects the posterior columns of the cord.

(Conclusion.)

317 Pennsylvania Building.

PUBLISHER'S NOTES

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Editorials

A MESSAGE FROM THE PRESIDENT

Among those who attended the great Portland convention, one of the chief problems discussed concerned the perpetuation and advancement of Osteopathy—that is, the system discovered and promulgated by Dr. Still. Thoughtful observers recognize that there is need for concentrated effort in this direction; for they discern that otherwise the great fundamental truth he taught may become obscured, or perhaps distorted, by the acceptance of extraneous methods of treatment.

We insist that the "Practice of Osteopathy is a complete and all-embracing system of therapy." Yet every intelligent student of therapeutics realizes that "Osteopathy" and the "Practice of Osteopathy" are by no means synonymous in scope and meaning.

The practice of osteopathy has come to mean all that Dr. Still gave to the world in his epoch-making discovery, plus many valuable truths and methods that were previously known, together with some that have since been brought to light. For example, we know that antiphlogistine, hot and cold water, and, under certain conditions, sedatives and other non-osteopathic factors of treatment may have to be employed by physicians engaged in extensive general practice, not as curative agents, but for purposes of alleviation and as means toward cures. These assuredly are not discoveries of Dr. Still's, yet for special and specific purposes they must be employed.

However, it is not my purpose to discuss here the legitimate or "orthodox" limits of the methods that may be used by the osteopathic physician in the name of osteopathy. My concern is our failure as a profession to determine clinically and record permanently the scope and possibilities of Dr. Still's discovery. There does not exist anywhere a collation of clinical data, with scientific deductions therefrom, setting forth in comprehensive form the osteopathic etiology and treatment of the various forms of disease with which our practitioners are called upon to deal. This is the most vital present need of the profession and the science, and it was to meet it that the Academy of Osteopathic Clinical Research was organized.

An influential section of our membership pleads faithfully and ardently for adherence to the tenets of "pure, unadulterated osteopathy"; surely they could not better demonstrate their sincerity than by coming forward now and enlisting in this most important undertaking. There is no other department in our great national organization that attempts to accomplish this service for the profession, and it may be termed a reproach to our body that provision to supply an obvious need was so long delayed.

When one considers it soberly, the lack of authoritative records is almost appalling. Let any member ask himself this simple question: "Where can I find illuminating, conclusive data, based upon actual experi-

ence, relating to the cause and treatment of any of the manifold forms of disease that are likely to confront me? He will learn that the best he can do is to apply to individual practitioners of his acquaintance, and that even many of the ablest of them can furnish only imperfect data because of their failure to keep complete case records. Despite all our organized activities, we have not on deposit anywhere data sustaining our philosophy and making its effective application more easily obtainable by all.

An opportunity to supply the deficiency is now open to each and every one of us. And the duty is not burdensome; the obligations of the Academy oath can be fulfilled by two or three hours of work each week. Every practitioner who will work faithfully and follow instructions obtainable from the secretary of the Academy, Dr. Geo. H. Carpenter, Goddard Bldg., Chicago, Ill., can have a part in the vital task of establishing osteopathy upon an enduring basis of demonstrated science. Do not delay—write at once to the secretary for application blanks and for the "Working Policies of the Academy of Osteopathic Clinical Research."

In this connection an earnest suggestion may be offered. Some of us are inclined to look for helpful effects in serums, vaccines and allied agencies which appeal so strongly to an element of the medical profession. Our advice would be to leave research in these directions to those who have originated it, because they have the advantage of well-endowed institutions in which to carry on their complicated experiments.

Nothing will be lost by concentrating our energies in our own field. Whatever truths may be found in these medical researches will become our heritage anyway, for osteopathy embraces therapeutic truth wherever found. For our own part, however, let us confine our expenditures of time and money to regions of exploration that have not been invaded by any other school, viz., osteopathic discovery. Let us make sure its foundations by cementing them with irrefutable clinical data. In this way we will render to our science and to mankind a lasting service.

Finally, let it be urged that members habituate themselves to respond to important notices and requests promptly, and upon a single presentation. Indifference or neglect means that repetition is necessary, and this causes needless waste of energy on the part of officers and additional expense as well.

There is no member of the profession, however humble or commanding his position, who does not owe some service to the common good. Let each of us resolve to be worthy of the great science to which we are devoted and of the honorable title of physician which we have earned.

O. J. Snyder, M. S., D. O.,
President A. O. A.

Philadelphia, Pa.

CREED vs. SCIENCE

Having been asked by the Journal to give my opinion on the abrogation of all restrictions to the development and practice of osteopathy, I herewith give my present convictions, always reserving the right, however, to change these convictions, as further light is granted to me on the subject.

First, let me be clearly understood how I look upon this question: To me it is not the question, whether or not our colleges shall teach the uses and abuses of drugs to the student body, for that is merely a phase of the same question which consumed so much valuable time at the Minneapolis meeting. At Minneapolis, the question was, "you must treat your patient with your ten fingers only, and you must do it in a manner which is approved by those in authority." This silly doctrine was placed in the scrap heap, when it was clearly placed before the convention, "that methods of treatment were not to be exalted to the rank of *principles of treatments*, and the question was

settled in favor of liberty to do the work in any manner harmonious with the principles of adjustment.

Now the question is before us again in a different phase, namely, "shall the student be taught, and the practitioner allowed to use such *methods* in his practice which have been proven by experience to be in harmony with what we now understand to be *truth*, even to the extent of prescribing emergency measures in the form of drugs." * * * To answer this question, and to answer it for the greatest good, not to the osteopathic profession alone, but for the good of the entire people of the world, *is the real question.*

Let us each and all ask ourselves some of the following questions, and let our conclusions be in harmony with facts, not beliefs, opinions, or dogma. Is the osteopathic profession to be developed as a *creed*, or is it to be developed as a *complete system or science of the healing art?* Can a science be complete when it is restricted by opinions? Can a science be complete when we refuse to accept truth in any form? Can a science be complete when its development is hampered by previous opinions, beliefs and traditions? Can a science be complete when we allow commercialism to warp our judgments? Can a science be complete when our policies say so far but no further must you go in your search for truth? Can a science be complete when you refuse, for commercial reasons, proven facts, which have been demonstrated by the test of experience? Can osteopathy ever be a complete system of healing when our policies are of a restricted nature? Can we ever hope to get complete freedom from legal restrictions when we refuse to give academic freedom to the individuals composing our group, or refuse this same freedom to our institutions of learning?

Is the policy of the osteopathic profession to be commercialism, or humanitarianism? Are we to be governed by opinions in our practice, or by proven facts? Shall our future development be in harmony with scientific honesty, or shall our development be subject to the limitations set by our self-constituted leaders, irrespective of scientific honesty? Will the osteopathic school of practice grow and thrive best under perfect freedom, or will it develop best when confined within certain limitations? Is our chief duty as physicians to be measured in personal gain, or is service to be our chief aim? Are we to be doctors first, and osteopathic practitioners second, or are we to be osteopathic practitioners first, and doctors second?

These are some of the questions that we must answer before making final decisions. My personal opinion is that perfect freedom is our only course.

C. B. Atzen, D. O.

Omaha, Neb.

THE SITUATION AS DR. TEALL SEES IT

Paradoxical as it may sound, we have gone ahead too fast and too slow. We have gone too fast educationally in trying to incorporate all the ideas in the world of therapeutics into our system, drugs being the last and most complete acknowledgement of failure; and all this to the neglect of osteopathic development, as a practice. We have not advanced, in my opinion, in any particular during the past ten years over what had been done ten years previously. In fact, I believe we have gone backward in some respects, for we are not treating acute conditions to the extent we once did and it is in that department we were showing greatest results and it was that which most needed development.

If the past ten years had shown the same advance as the previous years had shown, I doubt if we would be confronted with the present situation. I do not agree with the speaker at a recent meeting who said that Dr. Still had planted the tree but other hands had nurtured it until it now

bore perfect, well-rounded fruit. Other hands have attempted to care for that tree and accepted a sacred trust, but they have grafted on thorns and thistles until it no longer bears the true fruit.

It seems strange that osteopaths who are inclined toward research work will put in their time along beaten paths that have the world's laboratories filled with investigators, when there is a virgin field waiting in their own profession for development and proving the osteopathic theory. The work started ten years ago by McConnell has not been followed up as should have been done, yet he showed what wonders could be uncovered. Instead, our bright men are delving into bacteriology, serums and vaccines. We are teaching every thing under the sun, but not enough of the right thing and in so doing have gone ahead too fast for the scientific side of osteopathy as well as for its purity. We now present to the world a patchwork doctrine.

We have gone too slow in not giving to the world enough osteopaths to supply the demand for non-drug therapeutics. So quickly has this grown to great proportions that impudent and thieving impostors are making use of this demand by giving, in a small way, what we are not able to furnish in sufficient quantities. In my judgment it would be far better for us, as a profession, to be back where we were fifteen years ago without restrictive and prohibitive laws which may give us respectability, but which check our growth and limit our recruits.

As a profession, we have always stood for educational advancement so there is no reason to believe that we should not have progressed along that line and it would have been along strict osteopathic lines, too, for we would not have dared to trifle with drugs. Instead have we not begged legislatures to surround us with walls and hedge us in to our undoing in many states?

The intention was to turn out osteopaths and nothing else, but those who wished to study further and become surgeons could have gone to medical colleges, but we should have continued as osteopaths and had larger and better colleges because of the better support that could have been given by the profession. History shows how we went up in number of colleges and then, as we were regulated, we went down to the present number.

Our check in growth has not been from lack of academic freedom nor because of lack of comprehensive education, but because we have wandered from the original idea. In a recent publication there was comment anent the retirement of one of our leaders in osteopathic education and the suggestion was advanced that he had not progressed and found himself alone with his antiquated ideas of what osteopathy really is. No one need feel alone when he sticks to the tenets laid down by Dr. Still and the time is at hand to find where we stand as a profession on this very point.

This situation is sure: Someone is going to supply the public demand for drugless treatment. It behooves us to take the situation seriously, or we shall find ourselves outnumbered by an illy prepared imitator who is profiting by our example and going ahead by avoiding our mistakes and pitfalls. That the public is not critical about preparation is shown by their progress.

It is pretty late in the day to discuss this phase of our situation and the future seems a sealed book, for we are not a unit on any particular plan ourselves. This thing is certain, if osteopathy is to survive, we must be osteopaths and not members of a composite school of practice.

C. C. Teall, D. O.

Weedsport, N. Y.

REMEMBERING DOCTOR STILL AT CHRISTMAS

Readers of the JOURNAL recall the splendid letter printed in these columns in the last issue from Dr. Snyder regarding the plan he devised to remember Dr. Still on Christmas morning. It is believed that this response will be hearty and general.

Dr. Still does not need money. He does not need any gift of value which we could offer him, but he does appreciate being remembered. The years of sweat and travail and ostracism which he endured in order to give health to the hopeless, strength to the cripple, and to make the most substantial contribution of modern times to an understanding of body health, and by the sheer force of the irresistible truth he expounded, established a school of practice now honored and appreciated among men, entitle him to receive assurances at frequent intervals from us, whose lives have been blessed thereby, of our admiration and respect for him.

Any member can spare one dollar even when there are unusual demands for ready cash, and every member who contributes it will feel that he has availed himself of a rare privilege when he has added his name to those who wish Dr. Still to know at Christmas time that he and his work are held dear. We fear that all who fail through negect to send in this contribution will feel mortified and chagrined for many months to come for their failure to have a part.

Dr. Snyder suggested that the name of the contributor and the amount contributed (each is asked to send one dollar) be sent at once to the treasurer of his state organization so that it will reach him before December 20, on which date the State Treasurer shall send the list of contributors with the amount he has received to Dr. C. M. T. Hulett, 122 South Ashland Boulevard, Chicago, Ill. On Christmas morning Dr. Hulett will send a telegram to Dr. Still announcing the number of contributors and the amount which in his name has been turned over to the operating account of the A. T. Still Research Institute. Thus, when we know our friends are appreciating the evidence that we remembered them and we have joy in their remembrance of us, we will also have the keen satisfaction of knowing that a message, maybe our last message, has gone to Dr. Still.

The plan outlined should be followed. If, however, any failed to read the former notice and do not have sufficient time to send their contribution to their State Treasurer, so that it will reach him before December 20, they might send the amount direct to Dr. Hulett with a note to their State Treasurer telling him that the amount has been sent, so that each state may have full credit in the contest for the honors.

If this undertaking to express to Dr. Still in a most practical way our reverence and respect at the gift season fails it will not be because we fail to appreciate Dr. Still and his work (though Dr. Still might be justified in feeling it); but it will be through sheer carelessness and the characteristic delay and indifference to appeal which marks too many of us.

But when we remember how much interest Dr. Still has taken in what the profession has done in former times to try to carry to him a message of appreciation this should not be neglected. Better fail to remember the dearest member of our families than fail to carry this message at the Christmas time to Dr. Still. It is the chance of a life time—the chance of Dr. Still's lifetime—to express our sentiments in a practical way. Even the God-man, who declared the rule of conduct, "It is more blessed to give than to receive," did not deny those who wished, out of appreciative hearts, to show their feelings for him: "The poor you have always with you * * * me you have not always."

COLLEGE RECOGNITION

The Board of Regents of New York State on December 2 placed the Chicago College of Osteopathy on the list of colleges from which graduates may be admitted to the examination for license to practice their profession in that State. The Assistant Commissioner of Education recently inspected the college, and on his recommendation, the Regents took the above mentioned action.

This is a distinct recognition of which both the college and profession may be proud. Not all medical colleges, by any means, are recognized by the New York Board of Regents. It is considered the highest educational board in this country and its recognition of this college at once places our educational system on a basis which cannot be gainsaid or spoken of contemptuously.

The time is coming when we must take our educational situation very seriously. State departments of education, and we may say, the public generally, are interested in our colleges as educational institutions only. These departments have standards as to financial stability and support, number of teachers employed on full time and compensation paid, laboratory equipments through the several departments, etc. These points, we, as a profession, cannot afford to be less concerned in, but we cannot stop there. Such an institution does not necessarily meet our needs, by any means. When an institution meets the teaching requirements of the Board of Regents of New York State, for instance, it has a good title as an educational institution; but in addition to this, the profession must insist that the graduate is not only a fairly well educated man or woman, but that he knows osteopathy and believes in it sufficiently to practice it.

Our critics, within the profession, if we may call them such, tell us that we have drifted too long in these matters. Perhaps we have drifted. Perhaps their charge is true; but if true, it has been so in order to give the colleges a chance. They were institutions in which one or more members of the profession had not only put years of time, but thousand of dollars of hard earned money, and connected with them were many teachers who were likewise making sacrifices of time and effort. All felt that we should be more than fair to them, that their interest and effort should have a chance; and besides, there was the pressing need for more trained osteopathic physicians, and leniency with the colleges seemed to lend itself toward filling this need.

Since the inspection of colleges a year ago, the profession should feel more confidence in our educational system. It is not ideal by any means; but even so, the training a student gets in one of the best osteopathic colleges fits him for a life of so much greater usefulness than any other system does, that we need not lack confidence to advise it to the enquirer. With our conviction settled on this point it is the duty of every loyal osteopath who is at the same time a friend of humanity to take a serious interest in the growth of the osteopathic profession. This is the duty pressing upon every one of us and every one of us can perform a part of it. When we commend to others the profession we are following, it shows confidence and the effect on ourselves and on the community in which we live. The educational end of our institutions will improve and advance as fast as their support permits. Every member should support with the enthusiasm of pioneer days the institution which he believes is doing the best work.

A conference of representatives of our colleges and the Educational Department of the A. O. A. and many interested members of the profession will be held in New

York on December 11 and it is hoped out of this, and possibly out of other such conferences which may be held, that the solution of our great problem may come.

OUR LITERATURE IN LIBRARIES

The reading season is upon us. The next few months will represent the time of year in which most people seek the public libraries, both as a means of study for solid improvement, and as a means of whiling away the long evenings. The reading room and the library are rapidly becoming an institution of education; great care is being exercised, and large sums are expended, in the selection of literature for many of these and for their maintenance, recognizing the important place they fill in supplying current information as well as in general education.

It has been regretable, but none the less true, that osteopathy has been represented in practically none of these. These facts have been stated and restated, but they must be reiterated until the result is accomplished, the result being the placing of such representative literature as we have in all of these institutions.

From month to month satisfactory progress is being made. Not a few libraries, when the literature available has been called to their attention, are willing to buy the literature from their book and magazine funds. All others, so far as we know, have expressed a willingness for the literature to be placed in the library if donated.

Here is the opportunity for the local profession, preferably as an organization, where it exists, if not, as individuals, to take this up with the libraries, and such as are adequately provided for, ask them to place the literature in their libraries from such funds. It is well if this request comes from laymen. Where this fund does not provide for it, the local profession should by all means contribute the literature which we have in hand.

That literature, so far as the Association has produced it, consists of the *Osteopathic Magazine*, which was founded and has been published for the distinct purpose of representing the osteopathic profession, rather than the osteopathic practitioner, to the public. That is certainly what the reading public is interested in. That is what, as a profession, you can afford to supply and cannot afford to leave unsupplied. As an accompaniment to this, the Association arranged with Dr. Woodall to prepare a short outline of medical development leading up to osteopathy with a concise but complete definition of osteopathic practice. This is a book of something over 100 pages and color illustrations, "Osteopathy, the Science of Healing by Adjustment." Other literature may be added, as for instance, the very excellent work compiled by Dr. G. V. Webster, of Carthage, N. Y.

The *Magazine* for library subscriptions costs fifty cents per annum. The third large edition of the Woodall book in three months enables us to make a price of fifty cents on all orders for libraries received before January 1. On this basis orders for at least ten thousand copies of the book and as many annual subscriptions to the magazine should be forthcoming. The *Magazine* is now a most attractive periodical and will make a favorable impression and a faithful representation of osteopathy.

When a young man or woman in search of knowledge goes to the reading room or library and finds nothing regarding osteopathy, what will be the impression? Certainly that it deserved no place among the scientific and popular literature displayed there; and when the real student and thinker goes there for an exposition of scientific truths which are before the public, what is his impression? The little volume, "Osteopathy, the Science of Healing by Adjustment" and the *Osteopathic Magazine* meets the needs in a modest, but very effective manner, and no member of

the profession can afford to remain in the same town with a library which does not present his profession to the reading public, now that proper literature has been prepared and placed in easy reach.

A TRIBUTE TO PRESIDENT SNYDER

The profession in Pennsylvania, represented by the State Society, the Philadelphia County Society and the Alumni of the Philadelphia College, which Dr. Snyder was largely instrumental in founding, gave a most unique and notabe dinner to Dr. O. J. Snyder on November 20 at the Bellevue-Stratford Hotel, Philadelphia, in recognition of his election to the presidency of the A. O. A. The celebrated Clover Room of the hotel was filled to its capacity and at the speakers' table sat the Governor and Attorney-General of the state, members of the Governor's staff, representatives of the Mayor of the city, who was unable to be present, and many of the most distinguished citizens of the community.

The presence of this notable gathering, and the no less splendid tribute the speakers bore to Dr. Snyder as physician and citizen, made a deep impression upon all present. It is indeed a tribute to a man who has lived fifteen or more years in so large a community, and was a pioneer in establishing a then unknown system, to win, by sheer force of merit as a physicial and citizen, the recognition which that remarkable gathering of the profession and of the highest citizens of the state and community testified to. In addition to being a personal tribute, it is also a recognition of the profession and science which the practice and efforts of Dr. Snyder have represented.

We speak of this in these columns because many have made the mistake which Dr. Snyder happily avoided. Many going into a new community, especially in the earlier days, seem to manifest a feeling of apology for their profession and at once assume the defensive. Whereas, Dr. Snyder from the first fought boldly for the establishment of osteopathy on the basis of its efficiency in disease and its educational institutions, and this position, together with his energy and force in fighting for this has largely brought him the recognition which culminated in the splendid gathering above referred to.

There is a lesson in this to the profession; a lesson for the profession on the basis of the individual members composing it, to qualify to the highest degree to meet sickness and relieve suffering, to educate the profession to the point where it is entitled to the respect and confidence of the public, and then demand that we receive what we are entilted to. This has been the line along which Dr. Snyder has fought and succeeded and we do not know that the efforts of any other osteopathic physician could have been so signally recognized.

THE KANSAS CITY MEETING

Since the announcement made in the last issue, arrangements have progressed steadily and satisfactorily. Dr. Farmer, the chairman of the Program Committee, confirms the opinion expressed in the JOURNAL recently that we have unsurpassed facilities at our hands for holding a wonderful meeting. Dr. Farmer's characteristic energy has been at work on the program, and as he has outlined it to the Executive Committee the Kansas City program will certainly make a record.

At a recent meeting of the local profession the following committee assignments were suggested to the Executive Committee for ratification:

Membership, Margaret Carroll.
Press, Zudie Purdom.
Clinics, George J. Conley.
Halls, L. R. Livingston.

Entertainment (Banquet), W. J. Conn..
Secretary, Hanna Leinbach.
Exhibits, R. H. Williams.
Reception, Ina Livingston.
Finance (Treasurer), R. H. Williams.
Registration, Sara Leinbach.
Information, A. A. Kaiser.
Reunions, Effie Messick.
Health Sunday, E. A. Tice.

These assignments have been made by the Executive Committee and the committees named above are being filled in by the local profession. Dr. Williams, as chairman, seems to have hearty and united support and every indication points to the arrangements going forward with energy and co-operation.

Dayton B. Holcomb of Chicago has been designated as head of the Transportation Committee with a local advisory committee, and a state Transportation Committeeman will be appointed from each state or group of small states.

Members can contribute largely to the interest and success of the meeting by suggesting to R. H. Williams, who will have charge of the exhibits, names of desirable concerns for the exhibit department. Please bear this in mind and give the exhibit manager hearty co-operation.

Departments

TECHNIQUE

CARL P. MCCONNELL, D. O.
Chicago

"Osteopathic Mechanics," is the title of a book on Technique by Edythe F. Ashmore, D. O. We have recently spent some time in studying several chapters. The work is a model of clearness and condensation. We unhesitatingly state that it is not only an honor to her indefatigable self, but to the profession as well. We would urge upon every osteopath to study this work, for it is certain to make a better osteopath of him.

This is the first time, so far as our literature is concerned, that a writer has touched bottom in a systematic and comprehensive manner of the physiologic movements of the spine and applied the same to the problems of osteopathic spinal lesions. Naturally Lovett's classic has been requisitioned into service, but in the osteopathic coloring and arrangement and adaptation of the same, the doctor exhibits a profound knowledge of osteopathic etiology and pathology and technique that redounds great credit, in our opinion, to her own original self.

No doubt a number will lament the fact that some special method of theirs is not portrayed, but they should recall that this is no attempt at compilation. It is written primarily for the student and follows out consistent and definite ideas of technique. But we are certain that every practitioner will find valuable ideas, and that if thoroughly and carefully studied the underlying plan, physiologically conceived, will answer a number of questions that have been heretofore not always clearly stated.

To the practitioner the really valuable part of the work is that it is strung upon such a consistent scheme, anatomically and physiologically, that many methods which have been apparently isolated or lacking in scientific co-ordination will be revealed to him as part and parcel of a consistent whole (mechanism). This is no small task, and represents a tremendous amount of labor.

Following the first chapter which considers "The Lesion," "The Spinal Joint," and "The Matter of Equilibrium," the "Normal Movements of the Spine" are clearly depicted and supplemented with instructive experiments that every student should carry out. This part is basic to all that follows.

Next comes a chapter on "Lateral Curvature of the Spine." From this section we wish to quote two or three paragraphs.

"In functional curvature the bodies of the vertebrae have rotated to the concavity of the curve; in structural curvature, they have rotated to the convexity of the curve. The transverse processes have taken part in the revolution of the vertebrae until in scoliosis upon the side of the convexity may be found the high side, upon the concavity the low side. As the transition from functional to structural takes place, as the bodies are turning, there comes a time when the body of any particular vertebra is directly in front, antero-posteriorly, of the spinous process. The vertebra itself shows a side tilting to the right when the concavity is on the right, or expressed more exactly, a line erected perpendicularly to the right. At this place in the rotation of the vertebrae, there is no undue prominence of either transverse process, so that it is impossible to distinguish a high side and a low side. This stage of the curvature may be named the transitional, a stage midway between functional and structural, wherein there is yet no change in the shape of the bones. A curvature, as indicated by the line of the spinous processes exists, but without the other differentiating signs. In examining a patient with curvature, of which the high side is difficult to determine, it is safe to suspect that the curvature is in the transitional stage and that the bodies are in the process of

turning toward the convexity. The prognosis in such a case would be the same as for a case with moderate scoliosis except in one class of cases, those with flexible spines at a time when the vertebral bodies have not rotated beyond a plane parallel with the sagittal plane of the body. The mechanical principle in the treatment of such a case would be to turn the curvature back to the functional stage while building up the general vitality and removing the cause, and then correct the functional curve by the usual process.

"That few cases are found in the transitional stage is due to the fact that little attention is paid to a lack of symmetry appearing in growing child or adolescent. Much is left to chance by parents and guardians. It has been the popular idea that children will outgrow defects for nature will overcome every ill, over-looking the fact that habit is ten times stronger than nature. School boards insist upon examining a child's eyes, ears, nose and throat, but ask no privilege in regard to his spine, nor even suggest to parents the advisability of consulting a physician until the case, with an easily rectified functional curvature, has progressed into the almost incurable stage of scoliosis.

"Total functional curves most frequently change to total scoliosis, but it is common for a double curve to be formed in this change, with a small percentage of cases changing to scoliosis of limited extent, oftenest with the resulting curve in the dorsal area.

"Following the transitional stage begins the true scoliosis, with a change in the shape of the vertebrae, due to the fact that bone under pressure is not markedly resistant. * * *"

We have talked in the past with excellent osteopaths who could not adopt this functional-transitional-structural idea. We are glad the author thinks well of it.

Following this, are chapters devoted to flexion, extension, rotation and side-bending lesions of different sections of the spine, and also lesions of the sacro-iliac articulations. Two noticeable features aside of the adjustment work are the experimental lessons and the specific corrective exercises. The corrective exercises are designed as supplementary work in assisting the correction of the lesion, and preventing recurrence of lesion after once adjusted.

Dr. Ashmore is a devotee of what we some time ago termed in this department, the "physiologic" method in distinction to "dynamo-mechanical." She terms the two methods "Direct" and "Traction." Very likely these are better terms for they have the merit of being short and pointed.

Of course to a certain extent there is an overlapping of the two methods, and with some lesions one method is to be preferred by all operators. The method employed is not a particularly vital point just so long as one can secure results that are effective and do not unduly shock the patient or tire the operator. Much depends upon one's early training. Personally we commonly prefer the "Traction" method; probably because we are more accustomed to it. But this is neither here nor there so far as the fundamentals of the book are concerned. We greatly rejoice that the doctor has given us a work that is so clear-cut anatomically and physiologically.

Rib lesions clavicular and other lesions and soft tissue technique receive due consideration.

The technique of "Osteopathic Mechanics" is set in a background of osteopathic etiology, osteopathic pathology and osteopathic diagnosis. This constitutes the alphabet of osteopathy; it renders the work teachable. In this manner the osteopathic skin is kept intact. It favors preciseness and definiteness without any dogmatic flavor. The student is led step by step to a true understanding of what is basic to osteopathic science. This represents constructive ability and is worthy of the profession.

In this manner the author gets at the inner meaning of the art, the power it represents; there is a logical blending of all the factors that comprise therapeutics. This is the biologic conception of osteopathy that makes it a living force,—perfection of the organism in all that the word implies, of which adjustment of the parts to themselves and to their environment is the means to an osteopathic end. This is our greatest educational and developmental problem.

In this book the student obtains a valid understanding of what the lesion represents etiologically and pathologically, as well as a definite and consistent method of acquiring the art. This is the true test of teaching. All methods of technique in order to be effective, must have a physiologic basis. And as we have said, naturally, there will be certain over-lapping of methods for no matter how many methods of application there may be the principle of adjustment is confined within certain anatomical limits. From the teacher's standpoint, it is the grounding of the work that counts. And only after all of this is secured can effectiveness, real efficiency, adaptiveness and personality be truly considered. We are highly appreciative of the book both scientifically and educationally.

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J. D. Cunningham, D. O., presents the following, instructive ideas on general and specific treatment, based upon many years of very active practice:

"There is probably no osteopath in practice for any considerable length of time who does not find it necessary to explain to some clock-watching patient the difference between general and specific treatment. The fact that erroneous ideas about them are constantly turning up and that these ideas are productive of disadvantage, is an excuse, at least, for bringing forward again the time-worn topic.

"This confusion in the mind of the public about the necessary time and character of treatment

arises partly from a failure to distinguish between osteopathy and massage; partly from the fact that chronic diseases of a character calling for general treatment really constitute a large part of osteopathic office practice, so that the idea of osteopathy that filters down from the treatment room to the non-reading lay-mind is colored thereby; and partly from the fact that many practitioners tend to discriminate less sharply between the two kinds of treatment, as they settle down into practice, because of inertia with its constant temptation toward the line of least resistance and the inevitable consequent routinism.

"But to my mind, if one has been well inoculated with the osteopathic idea, he will find it impossible to ignore the distinction between general and specific treatment. Osteopathic treatment can no more be "standardized" as to time consumed and the necessary round of procedure than can drug medication. We spend years in training our minds and our finger tips to diagnose bodily conditions; and diagnosis dictates the next step, it determines not only the point where treatment must be applied, but also the kind of treatment.

"Diagnosis may disclose:

1. A well-marked lesion (bony, muscular, or otherwise) which has produced as yet no secondary effects. For example:

(a.) A slipped innominate; patient unable to walk; nothing for the doctor to do but to set the innominate.

(b.) The head of the femur twisted in the acetabulum; patient unable to walk; head of femur replaced; no further trouble. In this and the case above the doctor had been called at once.

(c.) Lesion at fourth and fifth lumbar; man unable to walk and flat on back for eight months before an osteopath was called, but still in perfect general health. Treatment at fourth and fifth lumbar restored him to activity; patient discharged in three months. No general treatment.

2. A well-marked lesion or group of lesions, which have produced perverted physiological action.

(a.) Curvature in lumbar area producing menorrhagia and endometritis.

(b.) Lesion in splanchnic area, involving metabolism and ultimately causing anemia.

3. No well-marked lesion, but obviously diseased conditions which must have arisen from an obscure anatomical cause.

"Cases of Class (1) indicate specific treatment. An adjustment is to be made. When that is done the patient is cured. 'Find it, fix it, and leave it alone.' There is no more occasion for adding general treatment than there would be for washing a window every time we had occasion to open it or close it.

"Cases of Class (2) are not all alike in their indications. Some must have general treatment; some, specific; and some, both. General treatment is indicated wherever nerve centers have become involved and the bodily forces have to be stimulated and trained to do their part. Anemic conditions require general treatment in connection with specific treatment of the causative lesion. Neurasthenic patients have to be coaxed back to health and nervous tone largely by general treatment.

"General treatments are called for frequently to rest the tired business man or woman who has no lesion whatever, but needs to be 'toned up.'

"Incomplete diagnosis in obscure cases (Class 3) requires the giving of general treatment. Specific treatment can't be given until a lesion is found; albeit good effects may come from the old advice, 'treat where a lesion would have to be to produce the given symptoms.'

"The demand of the patient for general treatment when the osteopath knows that specific treatment is indicated by the disease, sometimes confronts us. It arises in such cases from ignorance or from a determination to get the money's worth; and as Dr. McConnell suggests, that is a place for the osteopath to do some educating.

"There is a tendency to manifest within the profession among our radical practitioners to say that only specific treatment is ever really needed. We cannot afford to ignore the plain call of certain kinds of conditions for general treatment. At the same time no practitioner can afford for professional reasons to give general treatment unless there is such a plain call.

"The control of acute pain through specific treatment is a necessary part of the osteopath's business, and he does it in a way that unlike the use of morphine and cocaine brings no attendant train of evils. For two decades before the interesting and suggestive discoveries of Dr. Fitzgerald, of Hartford, osteopaths have been relieving pain and at least partially effecting cures by pressure anesthesia. For example, we 'press the button' at the tenth and eleventh dorsal to control pain located in the jejunum, the first to third lumbar for a pain in the vermiform appendix, at the tenth, eleventh and twelfth dorsal to relieve ovarian colic and orchitis, and so on."

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The Jour. of the A. M. A. for November 27 contains an article on "Lesions of the Lumbosacro-iliac Region," by Langnecker. The article is specially interesting in showing which way the wind is blowing among the orthopedists. The reference as to the probable frequency of anatomic variations is interesting. Also in the last paragraph, under "Discussion," we note the following: "I can only repeat what one of the orthopedic surgeons—a man who has done more, probably, on lesions in the sacro-iliac region than anybody else in the country—told me. He said that there was a great deal yet to be known about lesions in this part of the body, and that he thought when the final verdict was given it would be an anatomic one."

CLINICAL DEPARTMENT

KENDALL L. ACHORN, D. O., *Editor*
Boston.

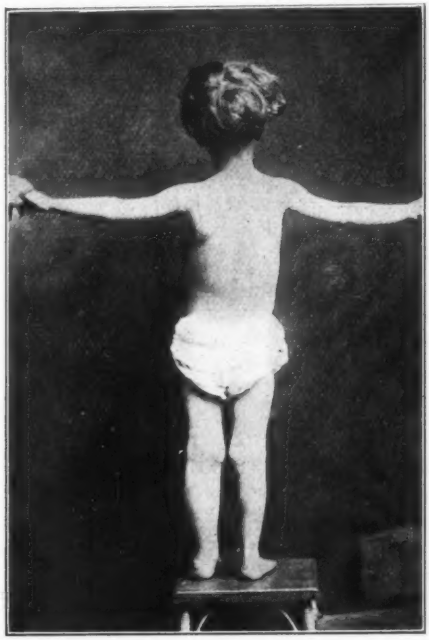
An Undiagnosed Case

Reported by BETSY B. HICKS, D. O.
Battle Creek, Mich.

Patient, Louis S—— ,Marshall, Mich., Aet. 4½ years.

Condition—An enlargewent of the left leg, which begins just above the knee joint and in cludes the calf, ankle, foot and toes.

The condition was first noticed about Christmas, 1914, when the child was examined by the family physician, who made no diagnosis. In April, as the condition seemed to be progressing, he was brought to the Sanitarium at Battle Creek and examined by W. H. Riley, M. D., nerve specialist. Dr. Riley considered the possibility of



poliomyelitis affecting the smaller or right leg or hypertrophic muscular dystrophy affecting the larger or left leg, and then concluded that neither condition was responsible for the trouble. He thought there must be an obstruction to the lymphatic circulation of the left leg, but he did not decide where the obstruction is.

During the summer, the boy was examined by W. S. Mills, D. O., of Ann Arbor, and by Dr. Washburn of the Orthopedic Department of the U. of M., but neither had seen a similar case.

The child has been under my care since April. He was an eight months baby, an only child, born of normal, healthy, young parents, both of whom have good family histories. He was constipated and had serious digestive disturbances all through his babyhood, although his mother nursed him. He has never had any of the infectious diseases of children, but does have an occasional cold with digestive trouble and a temperature of 101 or 102 degrees.

Measurements of Legs

	Apr. 12, '15		Oct. 15, '15	
	Right	Left	Right	Left
Mid. Thigh	10¼″	11 ″	10″	10 ″
Above Knee	.....	.....	8″	8½″
Below Knee	6½″	8 ″	7″	8½″
Calf	6½″	8 ″	7″	9 ″
Above Ankle	5 ″	5½″	5″	6½″

Roentgen Findings—Bones of the leg of equal size; cortex of same thickness; a little sharpening of the bone at the epiphyseal line indicative of some nutritional change.

The heart, while weak and rapid, presents no organic lesion.

Blood—Hem. 85.
No. per c. mm. red cells, 4,500,000.
No. per c. mm. white cells, 7,800

Average measurement of red cells ,seven and one-half mikrons.

Differential count, 150 leucocytes—not pathological elements.

Urinary Findings—Amt. 24 hrs. 200 c. c. Sp. g. 1028. Urea 4.20 gms. Chlorides 2.84 gms. No sugar. No albumin. Toxin Text X.

Bowels constipated. No adenoids, but tonsils slightly enlarged and deep red in color.

Height, 3 feet, 5½ inches. Weight, 34 lbs.

The muscles are small but strong. The boy is unusually active, runs, climbs and rises from floor normally. The affected leg has never been painful, its color and temperature are the same as the right leg. The peroneal muscles are extremely hard, but the other muscles seem normal in tone.

Treatment has been directed to the correction of lesions of the 2 C. 2-3-4 D. and to the strengthening of the lumbar spine and the left sacroiliac articulation, with attention to diet, rest, and out-of-door exercise. The child wears an elastic thigh stocking.

Improvements Noted—Heart is stronger and less rapid; there is free elimination from both bowels and kidneys; the left thigh now measures the same as the right.

The left leg has increased one-half inch in size during the past two months, making it now two inches larger than its fellow.

As the case has not been diagnosed, and is apparently very unusual, I am reporting it hoping that if any one of our profession has had a similar case, he will report it giving his experience and the outcome of his case.

Osteopathic literature, as far as the writer knows, contains no other description of osteopathic experiences in this condition.

This appears to be one of the cases of lymphangiectatic elepantiasis, as it is called in medical literature, though the name does not carry with it any information as to cause and treatmest. In *Surgery, Gynecology and Obstetrics,* Chicago, March, 1914, there is an article by Besley, describing a congenital case in which surgery was resorted to, the baby later dying of pneumonia. In the *Journal of the Michigan State Medical Society,* April, 1914, there is an article by Rockwell, describing a case of elephantiasis and giving references on the general subject and discussion as to treatment.

If anyone has treated a case of this sort, please let us know of your results. K. L. A.

(This department is at all times open to discussion of subjects of clinical interest to osteopaths. The application to particular cases of osteopathic technic of examination and treatment is especially desired. For the January number we would like to have reported one hundred cases of "sciatica" and "lumbago"—cases that have not as well as that have been cured. Address communication to the editor of the department, 687 Boylston Street, Boston.)

OTOLOGY

Chas. C. Reid, D. O., *Editor*
Denver, Colo.

The last two months some of the salient points on the anatomy of the ear were discussed. To refresh our minds we now briefly discuss

Function of the Ear

The philosophy of sound so far as the internal ear is concerned is only theoretical knowledge. The minute anatomy of the brain, the temporal bone and the physics of sound would necessarily have to be known and the functioning phenomena of each part explained to understand hearing. Hearing is the last special sense to awaken. When a child is born the middle ear is filled with amniotic fluid, embryonic tissue and macerated epithelium. This is gradually absorbed and the sense of hearing begins to function anywhere from the fourth day to the second week.

It has been definitely determined that the vestibule and semi-circular canals act as organs of equilibrium. When these organs are absent one will not have vertigo but the eyes, muscles and joints may be sufficient to preserve equilibrium.

The cochlea has the endings of the nerve of audition suspended in fluid. Sound impulses must pass through fluid in order to excite the auditory nerve. The cochlea has been found filled with connective tissue in deaf-mutes.

The ear is composed of a sound-conducting apparatus and a sound perceiving apparatus. The former is composed of the external ear, middle ear with the ossicles and their attachments. The latter is composed of the internal ear, the organ of Corti, ganglia and auditory nerve.

The conducting apparatus is only essential in the perception of low tones. High notes can be heard practically the same with the chain of bones, the drum head and the auricle absent. Then interference to the conducting apparatus causes degrees of deafness to sounds of low note while disease of the perceiving apparatus causes deafness to both high and low sounds. If there is fixation of the stapes in the oval window so it can not vibrate and an occlusion of the cochlear window sounds are not heard.

The function of the stapedius and tensor tympani muscles in the ear is to preserve equilibrium. Destroy the equilibrium and gradual deafness results. The drum membrane is the pendulum between the pressure outside and inside the middle ear. The air pressure outside is quite constant but that inside is constantly changing. The intrinsic muscles aid in preserving the equilibrium. If there were an open tube to the outside world the intrinsic muscles would atrophy. If the Eustachian tube should become patulous or the drum head should become permanently punctured the function of the stapedius and tensor tympani would be gone. The tensor tympani is the positive muscle and the stapedius is the negative muscle, i. e., the former regulates positive

pressure and the latter regulates negative pressure. When the equilibrium is perfect, the ear is in its most sensitive state to conduct all sounds. A continued bulging drum head or plus pressure overworks the tensor tympani. A continued sunken drum head or negative pressure overworks the stapedius.

Barnhill and Wales, in "Modern Otology," page 65, say: "These muscles in the ear do not have to do with sound waves any more than the ciliary muscles in the eye have to do with light waves." It is the power of accommodation.

The Organ of Corti—This is the end of the eighth nerve swinging in fluid in the cochlea. The pillars of Corti rest upon a basilar membrane which has cords which act as resonators. There are many resonators of different tones. Near the base of the cochlear these cords are about 1-20 m. m. long and increase toward the apex to ½ m. m. long. I call your attention to the fact that low sounds are heard or get their response on resonators toward the apex of the cochlea. There are about 15,000 to 25,000 of these cords capable of resolving 15 000 to 20,000 vibrations.

The Helmholtz theory of sounds: "Sound is resolved into its different tones which shake the basilar cords by their selective resonance, and through the swinging of the cords the corresponding hearing cells are affected. The stimulus is then carried to the brain, where the original sound is perceived as a whole through association tract activity."

Conditions Which Interfere With the Conducting Apparatus—(1) Amniotic fluid and embronic tissue may stop the cavity of the tympanum. (2) The Eustachian tube may become closed by lymphoid tissue, paralysis of the dilator tubae muscle, acute or chronic inflammation, adhesions, bacterial infection, large adenoids, tonsils and polyps. This causes negative pressure in the middle ear which is a loss of equilibrium. (3) Equilibrium may be lost by pathologic changes in the middle ear, e. g., serum, mucus, blood, pus, tumors, polypi, adhesions, fixation of the stapes by adhesion or bone growth, known as otosclerosis. There may be slight pathological processes which do not destroy the equilibrium, hence do not disturb hearing so far as our tests show. There may be slight thickening, some calcification and scar tissue.

The Edwards' Technique—Many doctors from all parts of the country have asked me what I thought of the work Dr. Edwards is doing and the demonstrations he has been giving. Others did not ask me for my opinion, but told me very forcefully what they thought. I have been entertained, instructed and amused.

I have studied Dr. Edwards from the near and far vision. I have been with him in his home, his office, at conventions and have read his writings I have seen him work; have watched him deal with patients, operate, demonstrate and study.

He is positive; that hurts some people, but it gets attention. He is sincere. This is questioned by some. The reason is because he has done some spectacular things and gotten a lot of advertisement out of it. Has not Dr. Still done much spectacular work and gotten advertisement? He is older, that's different, and he is not our own competitor.

Edwards is criticised for commercializing his work at our conventions. He took places on our programs, discussed and demonstrated his work as best he could in the time and under the circumstances.

Many hungered for more and requested his time and effort in private, offering to pay him for it. Who of our leading doctors, have given private instruction and private examinations to any extent at our conventions and then refused all compensation when it was offered?

Is the Catarrhal Deafness Treatment Meritorius?—It certainly is if done with discretion and discrimination. No doubt numbers did more or less naso-pharynx finger technique before Dr. Edwards graduated in osteopathy. But Dr. Edwards was the one who put it positive and radical enough to command wide attention and push it to the front. One of his faults was his radicalism; but it got him the attention of the profession. Another fault that has crept out into the profession from the work has been his lack of enough emphasis on *diagnosis* and *supportive* work. Many doctors learned (?) the naso-pharynx technique at conventions and went home to their practice to work it on every patient that had any signs of deafness. Many had no special knowledge of the ear or its diseases; they could not make a diagnosis as to what was really causing the deafness, and knew nothing of definite supportive work for the naso-pharynx technique. Many who had learned to find the fossa of Rosenmüller and the orifice of the Eustachian tube were ready to demonstrate the "Catarrhal deafness technique" in all the state and local associations so it went like wild fire. Soon everybody was ready to "cure" catarrhal deafness. Disappointment was inevitable and Edwards came in for a big share of the blame. The mills of the Gods are grinding and when nothing but the naked truth is left Dr. Edwards will have much left to his credit. Ear work like eye, nose and throat work, belongs to the specialist and one who does not work it up carefully should have his local specialist co-operate with him on all difficult work in that field. The result will be more to his credit and more to the glory of osteopathy.

If you will now refer back to the topic, "Conditions Which Interfere With the Conducting Apparatus," you can note the numerous things that may cause deafness without disease of the internal ear. Thus you will note that one case of deafness in five may not be simply "Catarrhal deafness." Diagnosis and supportive work are absolutely essential to any satisfaction in the practice.

(To be continued.)

Correspondence

A CASE OF PELLAGRA

I recently successfully treated a case of pellagra and believe a well regulated diet largely contributed to it. I began the treatment last July and there was a steady improvement from the very first. I have other cases of pellagra under treatment at the present time and they are all improving; but the cases which I treated up to the time I began the present diet all terminated fatally.

The diet I used on the case referred to above, and this case seems to have been completely cured, and is the same I am using on all cases now under treatment, is ten ounces of fresh beef per day and plenty of fresh vegetables, except cabbage, collards, etc., two ounces of sugar in egg custard, absolutely no corn bread, rice, hominy or grits. It will be apparent to the reader that the purpose of this diet is to elminate as much as possible the articles of food the patient eats or has eaten as a sole diet; for investigation proves beyond doubt that all pellagrins eat practically the same thing 365 days in the year and that is largely composed of starchy food. I allow them to cook their vegetables with salt pork, but do not allow them to eat the pork.

In addition to the dietetic treatment of course the osteopathic lesions are given proper attention and the symptoms are cared for as they arise, but the distressing symptoms almost always met with rapidly subside under this radical change of diet.

E. C. Armstrong, D. O.

New Bern, N. C.

[Editor's Note: Dr. Armstrong submitted to us a letter he had just received from the case he reported as having begun treatment in July, and the man states that his health is entirely restored and that he has not felt better in years.

Dr. Armstrong has had remarkable success in the treatment of malaria and has worked out a diet which he believes is very efficient. This is along the line of some of the recent medical discoveries (?) but has been in use by Dr. Armstrong for several years and will be reported in an early number of the Journal.]

Phlegmasia alba dolens

I do not recall to have seen in osteopathic literature cases of the above disease dealt with by purely osteopathic methods. I would like to tell briefly of two cases that have come under my care.

The first was a case of over thirty years' standing in which there was still stiffness of the knee and considerable pain in the lower lumbar and sacral regions. There was a badly displaced innominate which yielded to treatment after about three months of care and to such an extent that the patient, nearly seventy years of age, was able to get about with great comfort and with scarcely a perceptible limp. I claim that this case of milk leg was due to the displaced innominate.

In the second case the patient, an unmarried lady of about forty-five, had been operated on for appendicitis. Stitch abscesses delayed her removal from the hospital for some time. After her return home there was an interval so that it was nine weeks after the operation when I first saw the case. The surgeon who operated was strongly averse to having an osteopath see the case, although he told the friends that there was nothing to be done but to let nature take her course. That course as outlined by him was a long period in bed to be followed by permanent lameness. Upon the insistence of the family I was called in consultation. The surgeon met me and we looked the patient over together. When I had demonstrated the innominate slip, which was upward and backward and on the left side, he asked if it might not have occurred from lifting her when she was still under the influence of the ether. I took charge of the case on January 12, 1911. On the day of the examination I loosened up the innominate very slightly and two days later the patient was conscious of some relief from the pressure pain. I did not dare make a correction because of the danger of deluging the blood stream with the stagnant and impure blood with which the leg was filled to the limit of tension. Under careful management the case progressed without incident until August when she walked a mile without crutch or cane. Her recovery was complete and the following summer she took a long and hard trip to the Pacific coast and walked with the best of the party.

Clearly this was a case of pressure on the femoral vein. Is there any other data to show that this is often, if not always, the cause of milk leg? At the period of parturition the patient is, of course, peculiarly susceptible to innominate slips on account of the physiological loosening of the tissues about the joint to give expansion to the pelvic outlet.

Warren A. Rodman, D. O.

Wellesley Hills, Mass.

ASSOCIATE MEMBERS

If we should begin to train a child by starting with its grandparents, so should we begin to train the graduate osteopathic worker during his student days by creating an Associate Membership in the A. O. A. Enroll the entire student body of our colleges as Associate Members with dues at, say, $3 a year, for which they are to receive the Journal but are not to have directory listing or privilege of voting.

After receiving the Journal during their college life they will not be able to get along without it after graduation. Associate Membership to cease at close of college course, they then being

eligible to full membership. One thousand students (Associate Members) at $3 a year means something,—besides, the students will be furnished with a constant supply of real osteopathic literature which will do much to counteract the lukewarm osteopathic teachings of some of the professors in our colleges and cause the students to *demand* osteopathic techings from the colleges in accord with what they read in the JOURNAL.

Again, osteopaths who have given up the practice of osteopathy, temporarily, but still wish to keep in touch with osteopathic progress could become Associate Members and get the JOURNAL but have no vote or listing in the directory. Should they re-enter practice their Associate Membership would cease automatically, active membership to be resumed in the usual manner. No osteopath in active practice should be eligible for Associate Membership.

ADDISON O'NEILL, O. O.

DAYTONA, FLA.

CULTIVATE COURAGE

The osteopathic profession is too timid, and, as a result, it is neglecting an opportunity; an opportunity to get into partnership with the public. With more or less trepidation and sometimes over-anxiety, patients are earnestly persuaded that osteopathy is really worthy of their consideration. We labor hard to convince them that osteopathy will cure.

That is good as far as it goes. But it doesn't go far enough. We have made our point on that line fairly well and should now go on to the next point. We should take the attitude that individualized practise is established and accepted, and that the larger questions of health which are matters of public policy are equally a part of the osteopathic system. We should give our public to understand that in those things for which the public is responsible that require our co-operation, we are ready to do our part.

The medical profession receives annually millions of dollars for this kind of work, because the profession expects it and in unmistakable terms informs the public of the health agencies of all kinds that are required.

This personal, direct, active joint interest with the public in a common cause, we are missing almost entirely. And only because we have failed to educate either ourselves or our public.

There is plenty of money. Indeed a book of over 400 pages under the title, "Modern Philanthropy; a Study in Efficient Appealing and Giving," has been written on the subject of getting and giving money for public welfare. The author shows that $300,000,000 are given annually in this country for public welfare, and other authorities indicate that at least one-third of this is for health welfare. In the next ten or fifteen years the author estimates that three or four billions will be disposed of in like manner. There is a full discussion of the methods to be used, and to be avoided, by enterprises needing money, in approaching people for contributions. A frank, clear, confident, broad-gauged statement of the proposition is urged.

The difficulties experienced by people with money to give in choosing from the numerous causes importuning them for help, are fully discussed. This is true especially of people who try to give their thought with their money, so that when the money is bestowed it will do good, and not do harm.

In one instance the author was visited by an attorney whose client had instructed him to draw a will disposing of the client's fortune of three million dollars to any worthy object selected by the attorney. The donor has been unable to choose and the attorney likewise felt the need of expert advice so came to the author for help.

On the other hand, in another case a committee asked a philanthropist for $63,000 for a new charity they were organizing. On his request for a detailed statement of their plans, they could account for only $19,000 and in reply to a question as to what they expected to do with the remainder of the $63,000 said they "wanted to consult with him about that." Asking for a sum far beyond their plans, and then for advice from the donor as to what to do with it! This is an instance of what the author speaks of as organized social mendacity.

The author suggests a clearing house for philanthropy and causes that depend on public contributions, where should be kept on file complete data of all institutions and where people could get complete information to enable them to bestow their money intelligently.

Why have not more osteopathic patients made osteopathy a beneficiary in making up the budget of their philanthropies? It is not lack of appreciation of what osteopathy has done for them, nor of desire to see osteopathy extended and established.

The explanation lies in the attitude of the osteopathic practician. He has not educated his patients to think of osteopathy in this connection. They have never had a suggestion that osteopathy includes this kind of work. They see no incongruity in patronizing osteopathy for their ailments, and at the same time giving their money to medical institutions.

What is more to the point, the osteopath himself too often doesn't see it either. His patient may go directly from his office to the bank to pay a subscription to some medical institution, or to the County Treasurer's office to pay his taxes, a part of which goes to support a state university medical department, and neither of them realizes any inconsistency in the situation. In this the osteopathic profession permits itself to be degraded to the bargain counter and kept there. The bill for medical services which the collective public pays is a double charge. It

pays first for individual service of the physician. But it pays again in contributions to medical institutions to the tune of scores of million of dollars annually. On the other hand osteopathy receives from the public only the individual charge for the personal service of the physician. It is a bargain for the public. Better service for less money.

Nothing would be better for osteopathy just now than a widespread vigorous campaign of systematic education of the public by the osteopathic profession along these lines. This can be done most effectively by the individual osteopath. He should first get himself into the right attitude, and be sure he is properly orientated with relation to the subject. Get it finally settled that institutional work, health welfare work of all kinds, is an integral part of the osteopathic system, and that the osteopathic public owes it to osteopathy to do its part with the osteopathic profession in this line. Colleges, clinics, hospitals, sanatoriums, and especially the Research Institute need endowment. And it is the business of the osteopathic public to supply that endowment, just as the medical public has supplied one and one-half billions of endowment to medical institutions.

Have the courage to educate your patients.

C. M. T. Hulett, D. O., *Mgr.*

Research Institute, Chicago.

BRIEF CRITICISM OF TITLES TO SCIENTIFIC ARTICLES

The writer of a scientific article may choose a subject and, using that as the title of his contribution, write his article around the title; or he may write his article and indicate his subject very briefly in his title; or, having written his article, he may choose some word or words as his title that, while being very attractive in themselves, are but very loosely connected with the subject matter. In either of the first two cases the title may be quite satisfactory and well indicate the subject under discussion, while in the third case the title is likely to give very little, if any, indication as to the nature of the contribution. Such a title fails obviously as a title and is most likely to result in the article being overlooked and neglected by the very readers it should interest.

A title or an article should be a name or inscription that is distinctive; it should indicate to the reader the general line of discussion or phases of the subject, as well as the particular subject the contribution deals with. The title should be as brief and as attractive as possible, for its function is to advertise the article. It is the silent salesman of the writer. A title that fails to sufficiently indicate the contents of the contribution, regardless of the value of the article, defeats, in a large measure, the very object the writer strove for and often deprives the busy subscriber to the journal in which it appears of the help and information he is looking for and that the writer tried to give him.

"The Trail of the Serpent," "Putting Salt on the Tail of an Idea," "Special Cases," "One Hundred Thousand Men Minus" and "Inside the Fence" are titles that have appeared in osteopathic or medical journals within the past two years and well illustrate the unsatisfactory title. They either give no idea of the subjects under discussion or at best a very imperfect idea. They are plainly ambiguous and hence very indefinite.

Slightly better than the above are such titles as "Goitre," "Neurasthenia," "Appendicitis," etc. They indicate the general subject but are too frequently used alone when but one or two phases of the subject are considered. Were they followed by sub-titles indicating the lines of discussion to which the writers confine themselves in each case, they would serve their purpose well. But alone they are sufficient only when the whole subject each one stands for is discussed.

In contrast with the above examples such titles as "The Sphygmomanometer: Its Value to the Osteopathic Physician," "Dyspepsia—Its Cause and Cure," "Interosseus Lesions and Nutrition" and "Probable Pathology of the Spinal Lesion from a Mechanical Viewpoint" are quite indicative not only of the general branch of study but also of the particular divisions of the subject to which the writers confine themselves. With a glance at the Table of Contents of his journals the possible reader can choose the articles in which he is particularly interested if all the titles perform their full duties.

In addition to the above two general attributes, the ideal title will also, wherever possible, draw attention to some particular and unusual aspect of the contribution. For example, "Leprosy in Hawaii," "Human Conservation: A Neglected Field for Medical Specialization" and "'Back to the Soil': The Relation to Pulmonary Tuberculosis of Soil Formation," all present some rather striking features in addition to indicating sufficiently the subject matter under discussion. The unusual features attract probably more attention than the bare title alone would.

The undersigned has recently classified and card indexed some several thousand articles and the deficiencies in not a few of the titles were brought vividly to his attention. The above suggestions are made in the hope that a more careful choice of titles will result in a wider reading of the articles and in a saving of time for the busy subscriber to the journals.

E. S. Detwiler, D. O.

London, Ontario.

State and Local Societies

California—Ernest Sisson, D. O., of Oakland, has been appointed to the State Board of Medical Examiners to succeed W. W. Vanderburg, D. O., of San Francisco, whose term of office has expired. Dr. Vanderburg has been on the Board for a number of years and has done most acceptable work for the profession in the State. At the time of his retirement he was treasurer of the Board.

THE KING COUNTY OSTEOPATHIC ASSOCIATION has establshed a clinic in Fresno, to the maintenance of which twenty-five osteopathic physicians have pledged their services. The clinic will be open to sick and crippled children whose parents are unable to pay for regular treatment. The schedule of hours as announced are Tuesday and Thursday evenings from 7:00 to 9:00 and Saturday afternoons from 3:00 to 5:00. The King County Association will be assisted by an advisory committee of the leading women of the city.

THE OPENING OF A FREE CLINIC is announced by the profession of Oakland, Berkeley and Alemeda, in the Blake and Moffitt Building, Oakland. The objects of the clinic, as announced through the newspapers, are as follows:

First, to bring the benefits to be derived from osteopathic treatment within the reach of all; second, to provide instruction to all interested in the fundamentals of health; third, to establish a welfare station for babies and children, where they will be thoroughly examined and where instruction will be given to mothers as to the correction of errors of bony structure, posture, diet, hygiene, etc.; fourth, to give especial care to expectant mothers and furnish safety with a minimum degree of discomfort.

District of Columbia—The District Association held its regular meeting December 4. Ira W. Drew, of Philadelphia, gave a splendid address in which he outlined the work being done in the osteopathic clinic of Philadelphia and the treatment of mentally deficient children. Among the many guests present were S. P. Ross, of Philadelphia, and George Heaney, probation officer of the District of Columbia, who was interested to hear what osteopathy is doing for the class of children that come before the Juvenile Court. Regular meetings of the society will be held throughout the winter.—M. A. ENGLISH, D. O., *Cor. Sec.*

Georgia—The Atlanta Association held its regular meeting November 27, when "Osteopathy and Nervous Exhaustion" and "Diseases of the Stomach" were the subjects discussed by John Phelps, W. C. Goodpasture and Otto H. Gripe. E. E. Bragg, president, presided.

Louisiana—The State Board of Osteopathic Examiners met in New Orleans, October 23, and granted licenses to six persons who had passed the examination. The following officers of the Board were elected for the year: President, H. A. Price, Alexandria; Secretary, Henry Tete; Treasurer, J. G. Roussell, both of New Orleans. Paul W. Geddes, of Shreveport, and Henry Tete have recently been appointed to the Board to succeed themselves by the Governor.

Maryland—The tenth annual meeting of the Maryland Association was held October 9 in Baltimore. "Gastro-Intestinal Disorders" was the subject discussed by William F. Hawes, of Philadelphia, and "Diagnosis of Diseases of the Spinal Cord" was presented by J. Ivan Dufur, of the Philadelphia College. At the business session, which followed, the question of amending the present law was considered.

Officers were elected as follows: President, Grace R. McMains, Baltimore; Vice-President, H. V. Carter, Baltimore; Secretary-Treasurer, J. S. Johnson, Hagerstown; Legislative Committee, Harrison McMains, Henry McMains, H. V. Carter, J. S. Johnson, R. G. Stevenson, E. L. Schmid. —J. S. JOHNSON, D. O., *Sec.*

Missouri—The Ozark Association held its annual meeting in Springfield, October 28. I. L. James was elected President; G. L. Noland, Vice-President, and L. T. Noland, Secretary-Treasurer, all of Springfield.

Michigan—The Eastern Michigan Association met in Flint, November 12. "Infantile Paralysis" was the subject discussed by G. M. Smith, of the Romeo Osteopathic Sanatorium. This was followed by general discussion and clinics.

C. Case, of Saginaw, was elected President; Bess Strong, Ionia, Vice-President; M. Edith Williams, Flint, Secretary-Treasurer. The next meeting will be held at the Romeo Sanatorium in February.

New Jersey—The regular meeting of the New Jersey Association was held December 4 at the Y. W. C. A. of Newark. An important business session was well attended, at the close of which A. P. Firth, of Newark, discussed the subject "Food as a Medicine." R. M. Colborn, of Newark, presided and A. L. Hughes, of Bloomfield, is Secretary.

Resolutions were adopted expressing the sorrow of the members at the death of Mrs. R. M. Mitchell, of Newark, which occurred November 23.

New York—The New York City Society held its November meeting on the 27th at the New York Osteopathic Clinic, 35 East Thirty-second street. "Neurasthenia" and "Traumatic Neuritis" were the subjects discussed by Harry B. Martin, of Brooklyn; "Nervous Indigestion," Cora B. Weed-Marx, Newark, N. J.; "Mucous Colitis," Eugene R. Kraus; "Multiple Sclerosis," J. B. McKee Arthur, both of New York. The clinic cases examined were subjects which have been treated in the New York clinic.

THE HUDSON RIVER, NORTH, ASSOCIATION held its annual meeting November 9 and elected the following officers: President, Frances A. Perry,

of Troy; Vice-President, Elizabeth Frink, Troy; Secretary-Treasurer, Harriet Owen; Program Committee for the year consists of J. H. McDowell, Alice A. Brown, Arthur E. Were.

Ohio—The Miami Valley Association met in the Traction Building November 18, with F. C. Smith, of Marion, as the chief speaker, who discussed osteopathic legislation.

Pennsylvania—The testimonial dinner to Dr. O. J. Snyder upon his election to the presidency of the A. O. A. was given in the Bellevue-Stratford Hotel, November 20, when the banquet room was completely filled with members of the profession and distinguished guests. Seated at the speakers' table were the following, who responded to toasts in the order named: Dr. S. P. Ross, President of the Pennsylvania Society, acting as toastmaster; Governer Martin G. Brumbaugh; Attorney General Francis Shunk Brown; Mayor Rudolph Blankenburg; Colonel T. E. Murphy, Governor's Staff; W. H. Scott, Esq.; Major A. H. Leo, D. D.; H. L. Chiles, Secretary A. O. A.; Hon. E. J. Cattell; Jane Scott, Secretary Banquet Committee; Idella Grimes, Treasurer Banquet Committee; John H. Bailey, President, P. C. O. Alumni; C. D. B. Balbirine, President P. C. O. S.; A. M. Flack, Dean P. C. O.; Richard Wanless, President N. Y. C. O. S.; Vernon W. Peck, Secretary P. O. A.; Virgil A. Hook, Wilkes-Barre; H. M. Goehring, Pittsburgh; Margaret Evans, Scranton; A. Patterson, Wilmington, Del.; Charles Hazzard, New York City; F. B. Kann, Harrisburg; George W. Riley, New York City; F. H. McCall, Atlantic City.

The Western Pennsylvania Society at its recent meeting adopted resolutions upon the death of Dr. E. D. Rogers, of Newcastle, on Oct. 17. The resolutions bear strong testimony to the high character of the deceased, his exemplary family life and his loyal professional activity. The resolutions are signed by William Rohacek, C. C. Wright and F. L. Geohring.

Tennessee—The East Tennessee Association recently organized with the following as temporary officers: President, W. F. Link, Knoxville; Secretary, O. Y. Yowell, Chattanooga; Treasurer, Ionia C. Twitchell, Morristown. About twenty-five members are represented in the district. A meeting will be held early in the new year for permanent organiation.

Utah—The professon of Salt Lake City and vicinity held a meeting at which W. Curtis Brigham, of Los Angeles, was the guest, on November 8. Dr. Brigham was returning from attending the International Congress of Surgeons in Boston. The subject of his lecture was "Osteopathic Research in Epilepsy."

Washington—The Pierce County Association was formed with twelve charter members at a meeting held Nov. 11, with Drs. Thomas, in Tacoma. The following officers were elected: President, W. T. Thomas; Vice-President, E. E. Hikom; Secretary, R. H. Slayden. The organization will meet the first and third Mondays each month in the offices of Drs. Thomas, Fidelity Building.

The Seattle Osteopathic Free Clinic for children has recently been established. The staff of physicians numbers the best known practicians of the city and the Advisory Committee is composed of women prominent in charitable and philanthropic work. The clinic will be open to children only under fifteen years of age. While the treatments are absolutely free a fee of ten cents for each treatment will be collected to assist in defraying expenses. Clinic hours are 7:00 to 9:00 P. M. Tuesday and Thursday evenings, and 3:00 to 5:00 Saturday afternoon.

Ontario—The following officers were elected at the recent annual meeting of the Ontario Association: President, R. B. Henderson, Toronto, re-elected; Vice-President, C. E. Amsden, Toronto; Secretary, E. D. Heist, Berlin, re-elected; Assistant Secretary, F. P. Millard, Toronto; Treasurer, J. N. MacRae, Galt; Trustees, H. C. Jacquith, Hubert Hocock, J. H. Bach, all of Toronto; E. J. Gray, St. Thomas; A. G. Walmsley, Petersborough.

Notes and Personals

The Narcotic Law Interpretation—The Commissioner of Internal Revenue at Washington calls the Journal's attention to the fact that a false understanding seems to exist within the profession as to the rights and privileges of osteopathic physicians under the recent interpretation of that Act. The Commissioner refers to an editorial article in the August, 1915, number of the Journal, and writes as follows: "The quoted portion is presumed to have been based on a ruling contained in Treasury Decision No. 2232, but this quotation is not complete nor accurate. This mis-quoted excerpt of the decision would mislead members of the osteopathic profession by creating in their minds the idea that the Government has given recognition of the profession in this manner, whereas such recognition has long been withheld. Treasury Decision No. 2232 states in part as follows:

"'Osteopaths, therefore, should be permitted to register and pay special tax under the provisions of the Act of December 17, 1914, provided they are registered as physicians or practitioners under the laws of the State and the affidavit is made in application for registration on Form 678, as required by T. D. 2215 of June 10, 1915.'"

The Commissioner continues: "Special attention is directed to the fact that such persons applying for registration under the Harrison Narcotic Law are required to make affidavit on appli-

cation Form 678 that they are or will be engaged in the legitimate practice of medicine and are duly authorized by law to administer, dispense, or prescribe narcotic drugs, reference being made to the ruling contained in Treasury Decision 2215.

"The statement that an osteopath may register in any state is erroneous, as in no instance has the Federal Law superseded the State Law which prohibits the use of drugs by that profession. * * * Representatives of the osteopathic profession in Michigan called at this office and these matters were thoroughly discussed with them, and it was clearly pointed out that the Government would not be placed in the position of issuing a special tax stamp and registry number to a person who could not make the affidavit to application as required by T. D. 2215."

This seems to get us back to the starting point. Local Commissioners of Internal Revenue have no discretion as to whether they will issue to osteopaths the permit to have and dispense narcotic drugs. The Federal Law does not discriminate; where the state law gives the osteopath the right to use drugs he may qualify also under the Federal Act to dispense narcotics, covered by the Harrison Act. In states, however, where the osteopath is not permitted to give drugs the Federal Act gives him no such privilege, and this feature the JOURNAL mentioned in the first place as the probable effect of the decision.

It will be noted that the Government has long withheld the recognition of the profession.

Ontario Medical Investigation—As noted in a recent JOURNAL, the Commissioner appointed to look into the non-recognized schools of practice in Ontario has held several sessions. In November the osteopaths appeared before the Commissioner and made a very favorable presentation of their rights to registry. The Commissioner asked for considerable additional information which is being prepared and will be submitted to him at an early date.

A number of drugless systems have appeared before the Commissioner.

Soap Best Disinfectant—C. F. Bolduan, M. D., head of the Bureau of Public Health Education of New York City, has come out strong in the advocacy of soap and water as against disinfectants in contagious diseases. The following paragraph is taken from a recent report:

"Without detracting from the value of disinfectants when properly used, health officials have come to learn that much of the so-called room disinfection heretofore practiced during and after typhoid fever and other infectious diseases was unnecessary, and are placing their main reliance on mechanical cleansing with soap and water, followed, if possible, by sunlight and fresh air."

Strange to say, we are coming back to the old-time theory that cleanliness is about the best thing after all in the prevention of disease. Some day the point is going to be grasped that the condition of the body which is subject to infection, and that body which, under like exposure, did not become infected, is going to be given material consideration. Then prevention of disease is going to take on an individual aspect that will be worth something. After all, the race is individuals, and such get sick. Already there are signs from many quarters of awakening along this line.

School of Sanitary Science—It will be of professional interest to know that Columbia University of New York has decided to incorporate in its next session and support a School of Sanitary Science and Public Health. The object is especially to prepare sanitary inspectors, laboratory assistants and local health officers, and the completion of the course will be recognized by a certificate. A two-year course is contemplated at the start.

Interesting Observation—Under this head the November number of *Current Opinion* prints the following very suggestive paragraphs:

"Recent observations have called attention to the fact that seven men out of every ten who weigh less than 150 pounds and who are more than 5 feet 10 inches tall have active tuberculosis in some degree. This only emphasizes the conclusions at which keen observers have arrived—that tuberculosis is much more prevalent than the human race is willing to admit. Hundreds of physicians have tuberculosis and do not suspect it. Is it any wonder, therefore, that the average layman does not know what is the cause of his languidness, depression or nervousness?

"It is fortunate, however, that physicians at last are learning that the body makes its own antitoxins and serums for the express purpose of destroying germs of all character which enter or invade the organism. Physicians are learning that the body is a self-maintaining institution and that its ability to maintain itself depends upon the discipline the cells receive in harmony with the physiological limits of each individual organism. Discipline creates reactions and increases the molecular action. This means the production of greater energy and greater efficiency, mental and physiological."

Attacking Medical Fakirs—Under this caption the *Ohio State Journal* of a recent date prints the following editorial article which shows an insight into a condition that is hopeful:

"The Illinois Osteopathic Association proposes to get rid of the quack practitioners within their own ranks. Having failed, they say, to induce the state board of health to protect them against the fakes and frauds in their own school of medicine, the reputable practitioners have decided to clear the atmosphere by attacking the fakers in the courts.

"The special attorney representing the state board of health refused to act because he said

there was no such thing as an osteopathic physician. That is a very poor excuse. If the people are suffering from fakers in any school of medicine, or in none, the state board of health's first duty is to protect the people against medical frauds. It is not their business to draw lines and divide frauds into schools, but to go for the whole batch of them and drive them out of the state. It is easy enough to detect them. They are extracting money out of the gullible by promising impossible cures. The most important work the state board of health can do is to stamp out the medical fakers."

The osteopathic profession has lost rather than gained wherever it has placed a low value on the recognition the state has given it by not defending that recognition from impostors. Each school must identify its own quacks, and no school treats itself with the dignity and respect which it should demand when it makes no effort to do this where these quacks exist.

Coroner Must Give Certificate—Springfield (Ill.) papers of recent date report the death of a woman of 65, from pneumonia and heart complications, in the city hospital, who was under the care of Emery Ennis, a well-known osteopathic physician of that city. The case seems to have progressed rapidly and the termination was sudden, and under the Illinois law Dr. Ennis was not permitted to sign the death certificate, hence a coroner's inquest was necessary. This case will perhaps serve to bring to the attention of the public of the state afresh the condition in which the osteopathic profession of the state finds itself, and it is hoped that the coming legislature may provide a fair recognition of a practice that has met with signal successes in the state for so many years.

"Medical Freedom" Activity—The official organ of the National League for Medical Freedom published at 332 S. Michigan Ave., Chicago, is doing a very excellent work of education along certain lines. Its policy is "Medical Freedom" without any regard to sect or school of practice. As such it has a field of its own and its policies are such that osteopathic physicians can usually sanction and approve of them. Every osteopathic physician should subscribe to this little magazine, the price of which is 50c per annum. It will give both to him and his patients who read it much useful information.

Pellagra Study—The National Association for the study of Pellagra held its third annual meeting in Columbia, S. C., the latter part of October. Its sessions occupied three days and some of the best known physicians of the South appeared on its program. Both the president and vice-president are connected with the U. S. Army or Public Health Service. The program is interesting and no doubt much valuable information on diagnosis and detection of the disease was brought forth.

The most recent medical dictionary, that by Jelliffe, published by D. Appleton & Co., states that the disease is probably caused by the bite of an infected sand fly, and rather discredits the former theory of its etiology being through an almost exclusive carbo-hydrate diet or being due to fermented maize. There seems to be a wide difference of opinion, however, on this subject, as the title of one address is "Diet as the Cause and Care of Pellagra" and another "Report of Treatment of Cases of Pellagra by Vaccines Obtained from Inoculated Monkeys."

Body Found After Six Months—Members of the profession will recall that in the latter part of May it was anounced that Charles L. Richardson, D. O., of Cleveland, O., who was the guest of wealthy patients in the East, was lost in the mountains of Western Massachusetts. Dr. Richardson, who was recuperating from a nervous breakdown, went out on the mountains with his father, and while the latter had gone to get the son a drink of water, disappeared, and though the section was searched for days no trace of him was found. Late in November a body, which was identified as that of Dr. Richardson, was found at the foot of a precipice some distance from where the father and son had parted. Dr. Richardson was a graduate of the A. S. O. in the class of June, 1901, and had been successful and highly respected in Cleveland, which had been his home since graduation.

Round Robin Letter Lost—Dr. J. A. Ryel, Hasbrouck Heights, N. J., asks readers of the JOURNAL to aid her in locating round robin letters from Drs. John and Elizabeth Taylor, of Patiala, India. Some of the members of the circle of the West Coast, to whom the letter was sent, appear to have been at fault in holding it up. This is printed in the hope that the delinquent member may recall his neglect.

Arkansas Board Re-appointed—Charles C. Champlin, of Hope, and Byron F. McAllister, of Fayetteville, have recently been re-appointed to succeed themselves on the State Board of Osteopathic Examiners for a period of four years.

Personals—T. L. Davis, of Augusta, Georgia, has spent several months recently in Chicago, doing post-graduate work at the Graduate School of Medicine, followed by a course of post-graduate study at the A. T. Still Research Institute, specializing under Dr. Deason in the treatment of catarrhal deafness. He resumed his practice in Augusta, December 1.

Charles H. Kaiser, of Lockport, N. Y., who was a candidate for Coroner on the Progressive ticket, received a very flattering vote at the recent election, it being about three times that which he received when he ran on the same ticket two years ago.

Dr. Antoinette Moore, of Belleville, Kan., was elected secretary of the Grand Chapter of the Delta Omega Society, at its last annual meeting.

Drs. Charles F. and Helene Kenney, of Laredo, Texas, have let the contract for the building of a home and office and limited quarters for out-of-town patients and obstetrical cases.

Married—Dr. Myrtle Pleasant Morrison, of Emporia, Kan., to Mr. Charles B. Cochran, on December 1. Their future home will be Olivet, Kan. Dr. Morrison was a graduate of the A. S. O. of the class of June, 1906, and has had a successful practice in Emporia.

Miss Bernice McMains, daughter of Dr. and Mrs. Harrison McMains, Baltimore, Md., to Mr. Edward A. Martin, of Annapolis, Md., on November 16, at the bride's home.

Dr. Uel Reynolds, of Bound Brook, N. J., and Miss Elizabeth Johnson, Atlanta, Ga. Dr. Reynolds expects to make his future home in the South.

Born—To Dr. and Mrs. Lucius M. Bush, of Jersey City, N. J., October 15, a daughter.

To Dr. and Mrs. L. R. Daniels, Sacramento, Cal., on October 17, a son.

To Dr. and Mrs. E. J. Favell, Superior, Wis., on November 26, a son.

To Drs. Charles F. and Helen E. Kennedy, Laredo, Texas, on October 20, a daughter.

To Dr. and Mrs. J. M. Roberts, Marysville, O., on December 7, a son.

To Drs. C. L. and A. M. Treichler, Corry, Pa., on November 22, a son.

Died—At his home in Cincinnati, O., August 25, Dr. E. W. Kennedy.

At his home in Kirksville, Mo., October 18, Dr. R. S. Hallady.

At his home in Lockhaven, Pa., former Mayor Dr. Wm. H. Stevenson, of that city. The deceased was a brother of Dr. John H. Stevenson, of that city.

At the home of her son in Wilmington, N. C., on October 19th, the mother of Dr. M. J. Carson, of that city.

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Steeves, Herbert O. (Mc), 30 Huntington Ave., Boston.

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Keller, F. B. (A), 413 W. Jersey St., Elizabeth.

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CHANGES OF ADDRESSES

Ashmore, Edythe, from Kirksville, Mo., to 161 Atkinson Ave., Detroit, Mich.
Beets, Merritt J., from 21½ No. Washington Ave., to 110½ So. Washington Ave., Wellington, Kan.
Bell, A. R., from Cynthiana, Ky., to 309 So. Frankfort St., Kirksville, Mo.
Benson, W. R., from 610 to 612 Fourth Ave., Longmont, Colo.
Childress, T. E., from Osage City, to 525 Commercial St., Emporia, Kan.
Commerford, Mary E., from Carleton Bldg., to 5179 Delmar Blvd., St. Louis, Mo.
Cramer, Myrtle A., from Brower Bldg., to Producers Savings Bank Bldg., Bakersfield, Calif.
Croxton, C. H., from Baltimore, Md., to 5th and Commerce Sts., Fort Worth, Texas.
Cunningham, F. Lewis, from Auditorium Bldg., to Ferguson Bldg., Los Angeles, Calif.
Decker, James, from Larned, Kansas, to Boulder, Colo.
Dillabough, W. J. E., from London, England, to Hotel Buckingham, New York City.
Faddis, Counsel E., from 602 East Main St., to 305 West Main St., Alhambra, Calif.
Haslop, Edmund B., from Portland, to Pendleton, Oregon.
Hastings, Howard E., from Devenish Apts., to Longheed Bldg., Calgary, Alberta.
Howard, M. J., from O'Kelly Blk., to Fraser Blk., Pembroke, Ont.
Howells, Anna Gerow and Clifford, from 445 to 459 Mt. Prospect Ave., Newark, N. J.
Jackson, Charlotte M., from Cornwallis, Ore., to Tussing Bldg., Lansing, Mich.
Jeffery, James C., from Shelbyville, Ind., to Main and Springs Sts., Belleville, Ill.
Kaiser, A. A., from 729 Troost Ave., to Shukert Bldg., Kansas City, Mo.
Klippelt, J. R., from Kansas City, to Lebanon, Mo.
Ludden, Raymond, from 114 So. Brand Blvd., to 345 So. Orange St., Glendale, Calif.
Miller, Harry I., from Morgantown, W. Va., to Farmers & Merchants Bank Bldg., Festus, Mo.
Moellering, Bertha W., from Berlin, to Munchuerstrasse and Dresden, Germany.
Nevins, Zeula A., from Terre Haute, Ind., to Sedro Woolley, Wash.
Oldham, J. S., from 38 Pike St., to Jett Bldg., Cynthiana, Ky.
Pickler, E. C., from 17 So. 6th St., to Palace Bldg., Minneapolis, Minn.
Read, Miles S., from Philadelphia, Pa., to Franklin, Va.
Rernena, V. V., from Grand Island, to O'Neill, Neb.
Rice, Helen E., from 730 W. 22nd St., to 500 W. 12th St., Oklahoma City, Okla.
Root, Frank E., from 222 W. 8th St., to 143 W. 9th St., Erie, Pa.
Scott, H. A., from Aurora, Ill., to Illinois Bldg., Champaign, Ill.
Siegert, Anna Mae, from Mt. Vernon, Ill., to Macon, Ga.
Spalding, J. Lucena, from Ridgecrest, to Box 677, Asheville, N. C.
Stryker, Wm., from Lewistown, to Hennessy Bldg., Butte, Mont.
Syler, Harry B., from Burlington Jct., to R. No. 1, Paris, Mo.
Thorburn, Thos. R., from Brooklyn, N. Y., to 801 West End Ave., New York City.
Torkelson, Ida G., from Wanson, Wis., to Wells, Minn.
Triplett, Neva T., from 219 W. Broadway, to 601 W. Main St., Enid, Okla.
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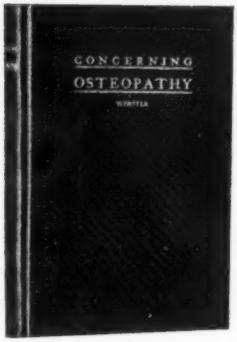

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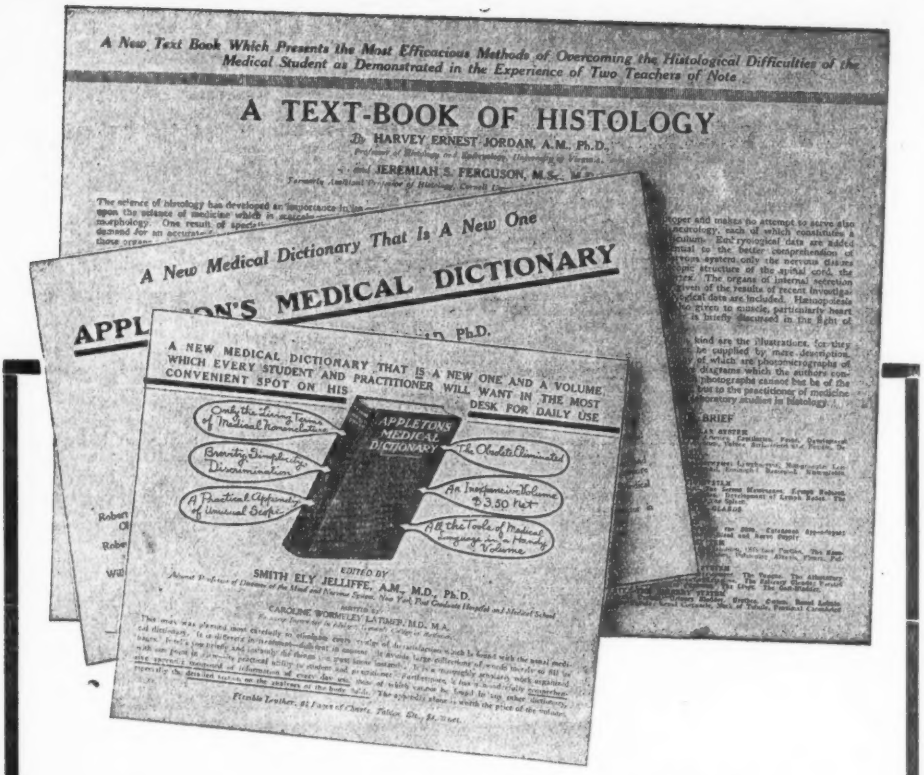
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